LNC woodworking Series

Version：V1.1

MW Woodworking Machinery

MW Woodworking Machine System Operation Manual

Enable Intelligent Machine

Enable intelligent machines

Contents

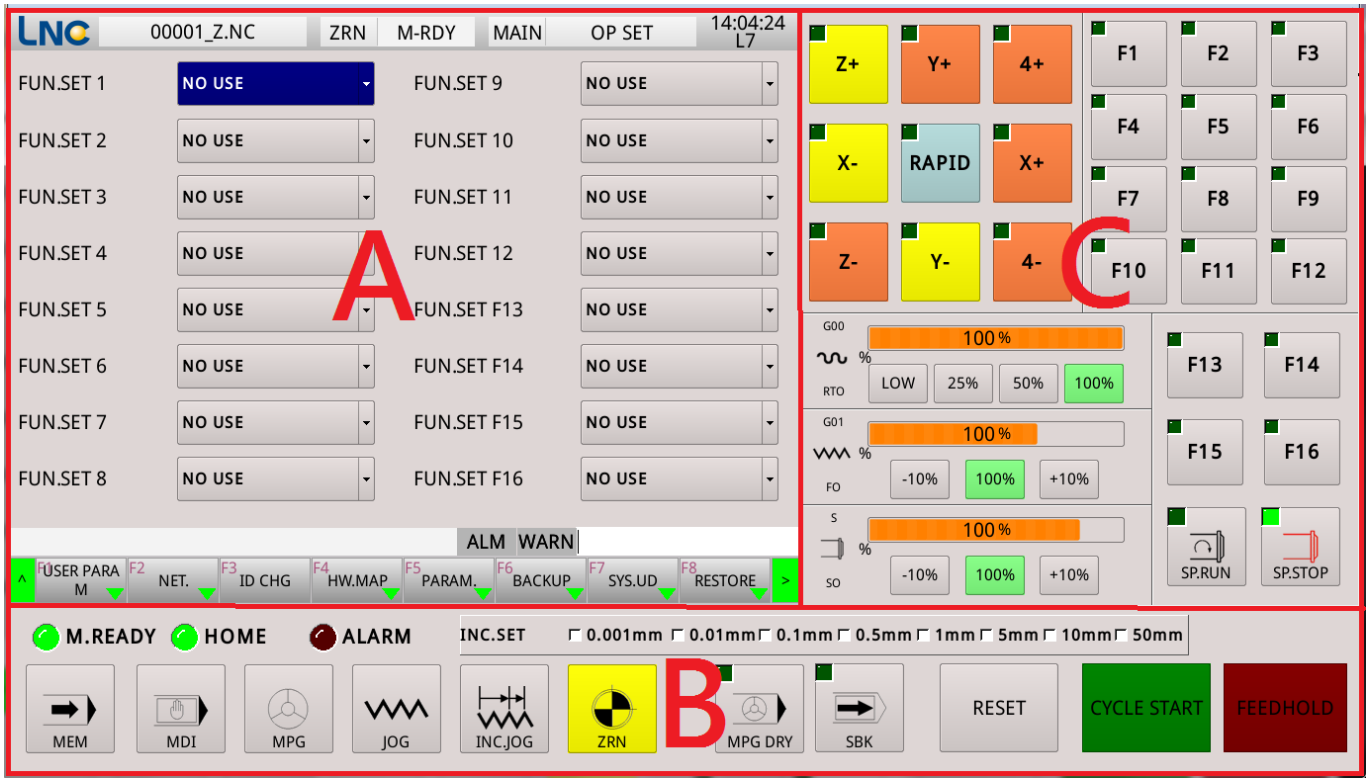
1. Operation Panel

At present, the woodworking machine system is divided into four major systems: MW2200, MW2800, MW2900 and MW5800. Among them, MW2800 and MW2900 are the same series. Therefore, they are only divided into three series actually, and each series has some differences with others. The following is the introduction of each series.

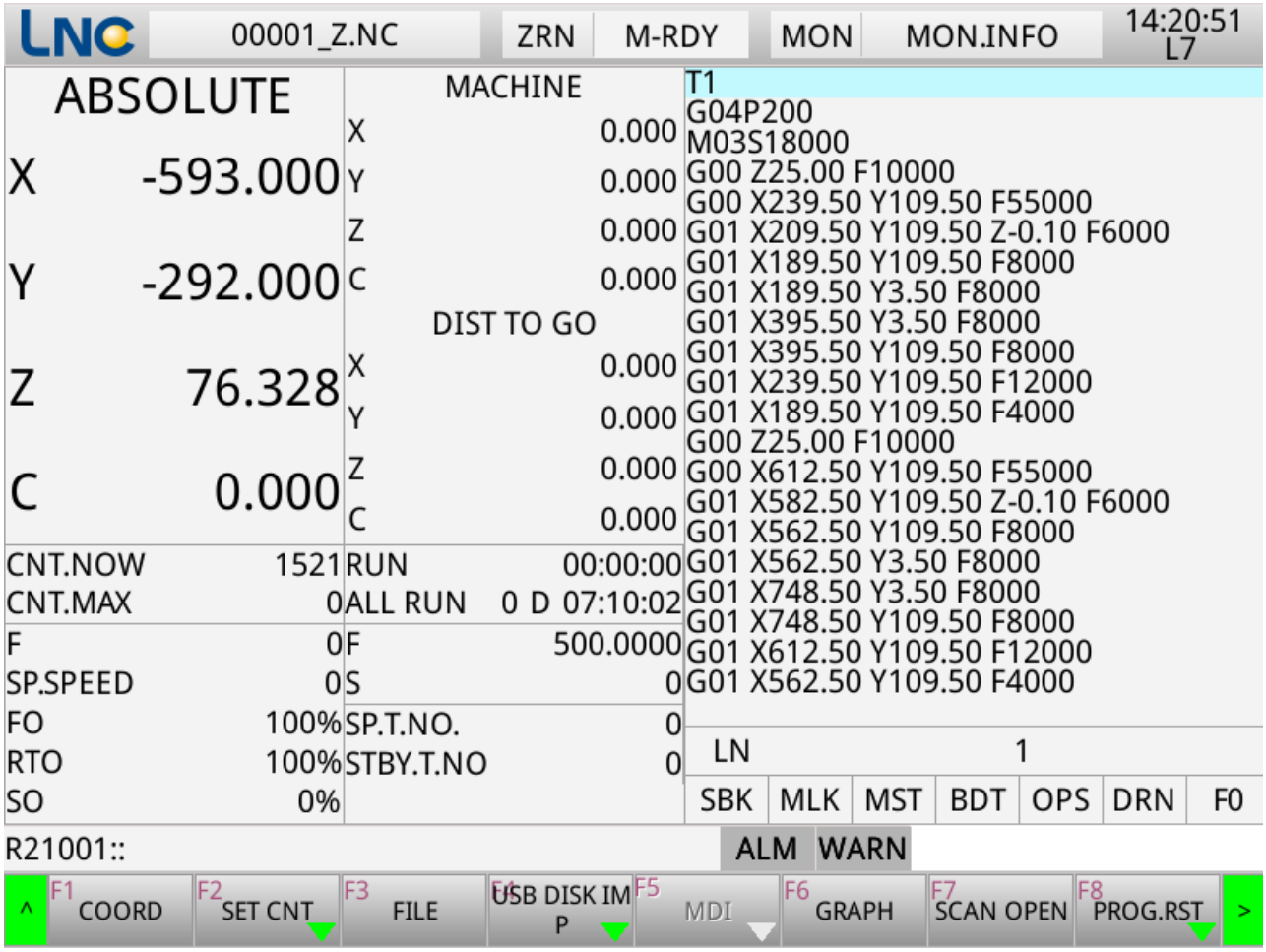
1.1. MW2200 Series

The MW2200 screen is shown in the figure below and is divided into three major areas. The instructions for each area are as follows:

- **A** : Main screen area Please refer to 1.1.1. MW2800 is similar or identical to this part of MW5800.
- **B** : Mode area Please refer to 1.1.2, and this part is the exclusive screen of MW2200.
- **C** : Operating area Please refer to 1.1.3, and this part is the exclusive screen of MW2200.

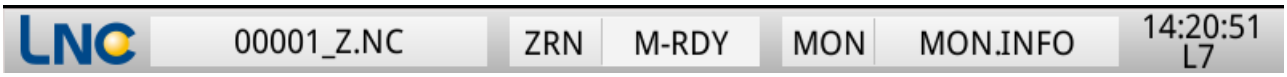


1.1.1. **Main screen area**

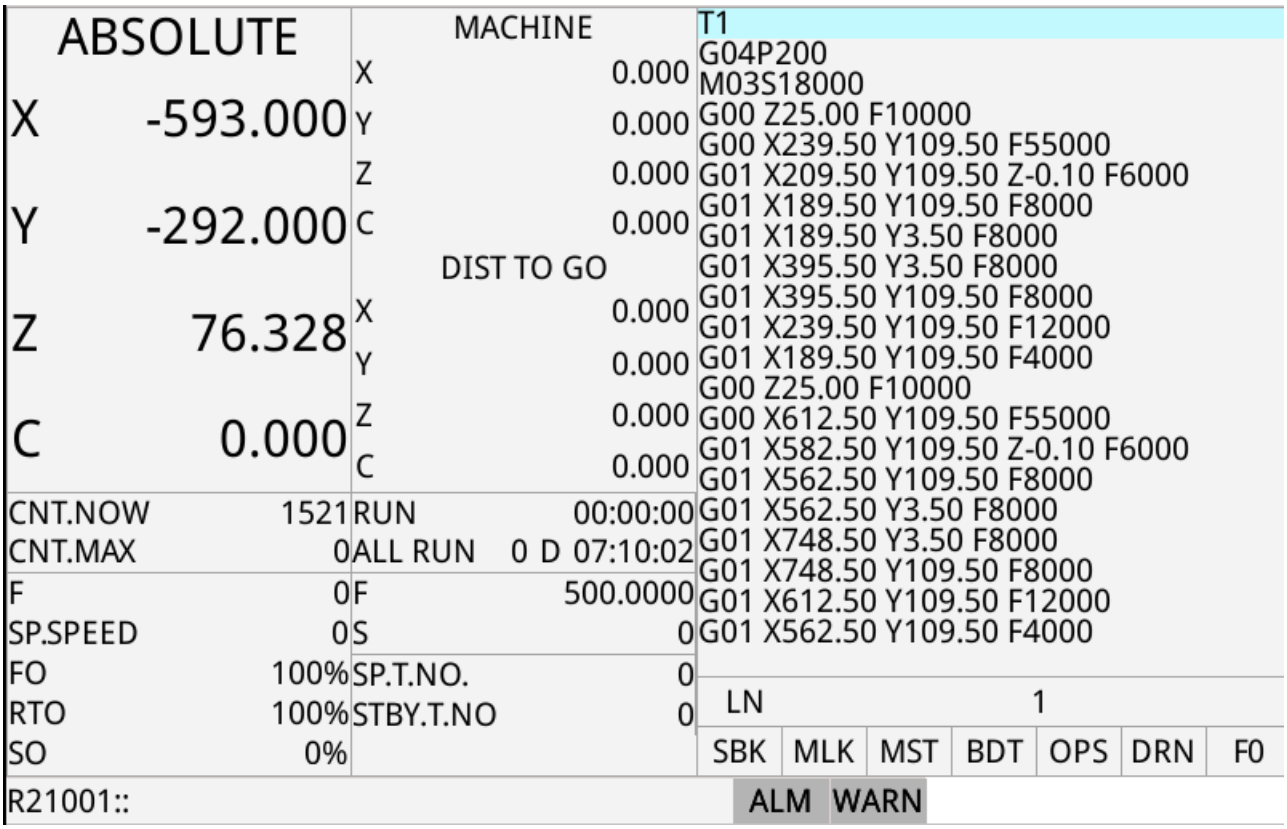


The main screen area is mainly divided into three parts, as explained below:

- **Caption**：display the currently selected processing file, system mode, system status, selected page, time, and user level.

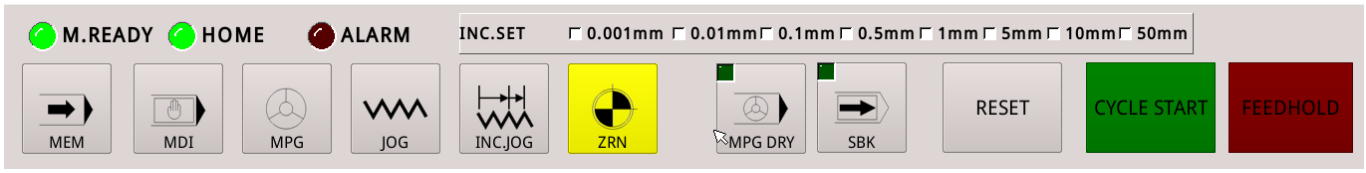


- **Page**：: display the content information of the currently selected page, which will have different content as the selection of different pages.



- **Button menu**：: available for page switching and function selection. The left ^ (up arrow) represents the previous menu; the right > (right arrow) represents the next menu.

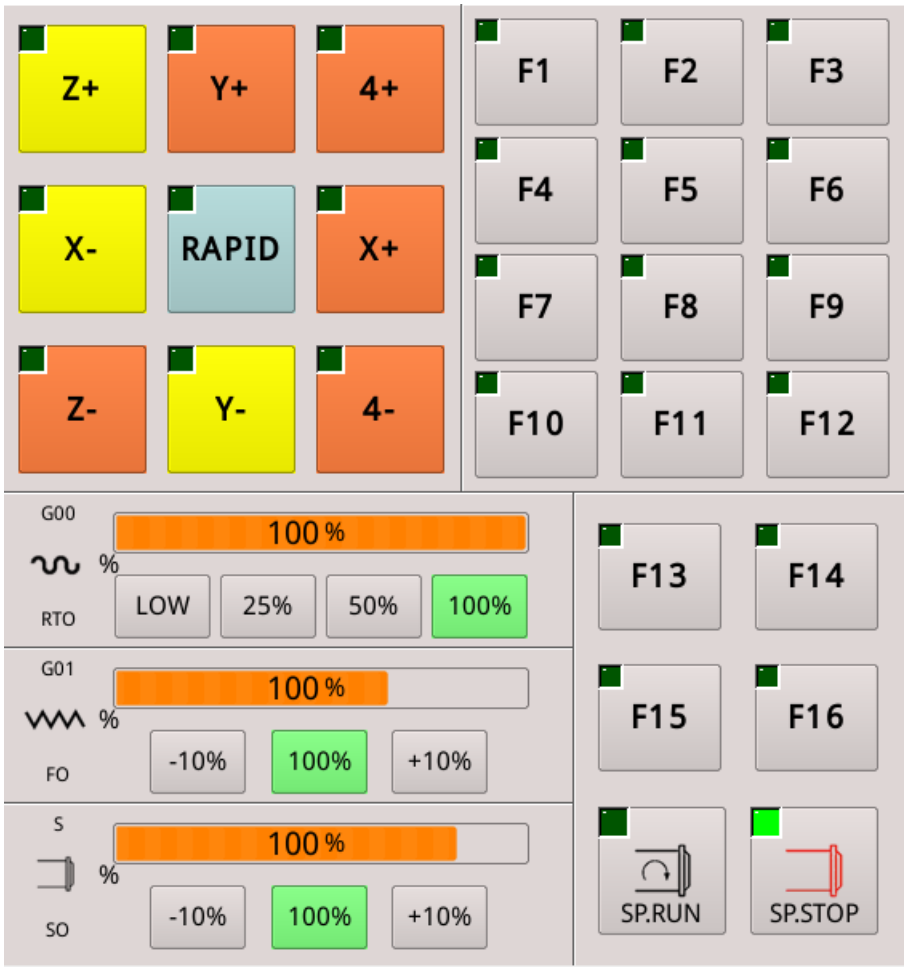
1.1.2. **Mode area**



The mode ares is divided into 5 parts

- **Lamp signal**：There are three lamp signals, which are the system preparation completion, the ZRN completion and the system alarm.
- **Incremental inch setting**：For the incremental inch function, eight different length settings are provided, and the system mode is automatically switched to the incremental inch mode after setting.
- **Mode switching**：Six modes are available: auto, MDI, handwheel, inch, incremental Inch and origin.
- **Processing accessibility**：Two functions are available, namely handwheel simulation and single section execution.
- **Operation button**：Three operation buttons are provided, which are system reset, starting of processing, and program pause.

1.1.3. **Operating area**



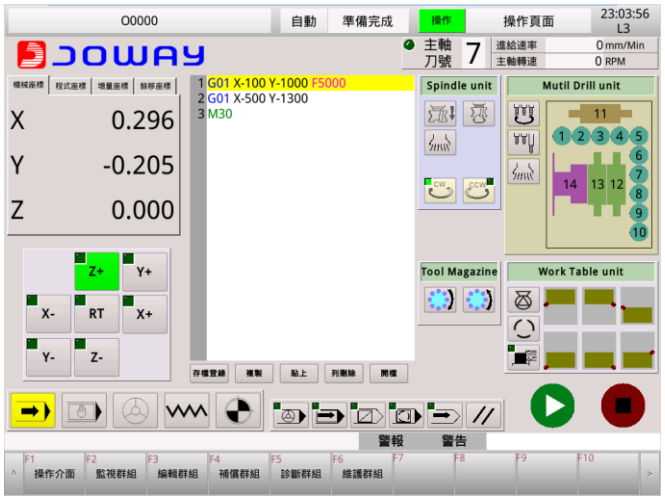
Operating area is divided into four parts

- Arrow buttons：Provides selection buttons for each axial movement during manual operation (inching/incremental inching). The selection button of the rapid positioning (RAPID) mode is in the middle. When clicking in the inching mode, it becomes the fast forward mode, and then return to the inching mode when clicking again.
- Override adjustment：Provides three override adjustment modes of fast forward override, feedrate override and spindle override.
- Selectable function buttons：F1-F12 is a customized operation menu, which can be selected according to the actual machine configuration.
  - Select the path set：Maintenance Group > Next Page > Item Setting
- Fixed function buttons：Six fixed function buttons are provided, namely vacuum pump, positioning, tool changer forward rotation, tool changer reversal, spindle startup and spindle stop.

1.2. **MW2800 / MW2900 Series**

The MW2800 / MW2900 series is a model that provides a customized operation interface for the machinery factories, so it will have one more operation interface than other models; the following figure

shows different operation screens designed for the needs of various manufacturers:

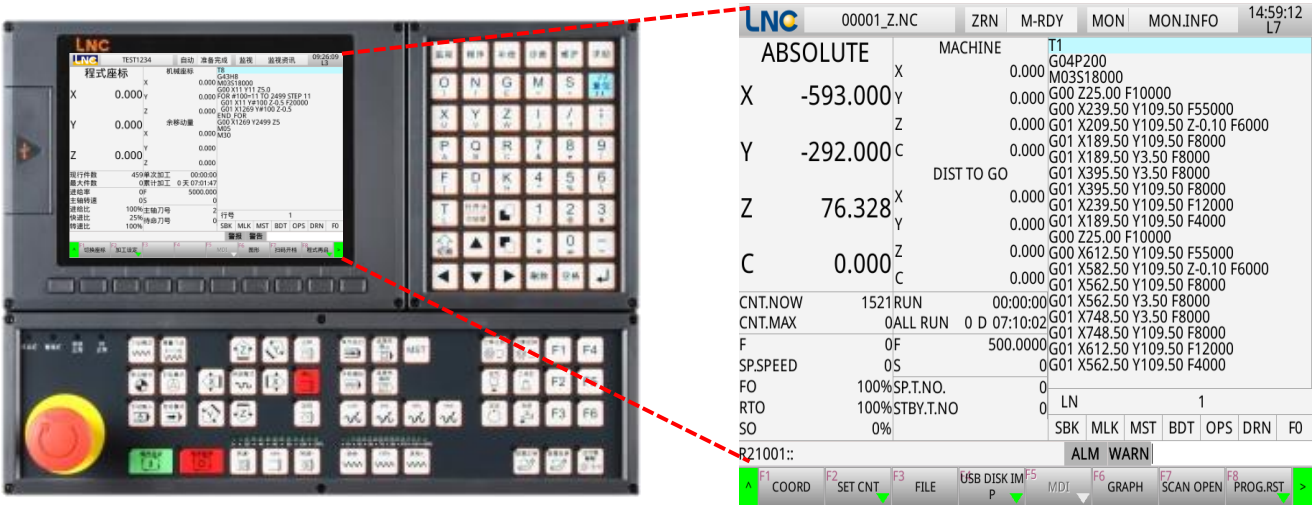


Since there will be one more page of operation screen developed by the mechanical manufacturer, there will be a button for the operation interface in the button menu part of the bottom, which is convenient for the user to switch back to the main operation screen quickly.

The other operating parts are basically similar to the MW2200, which are operated by a keyboard and mouse. The only difference is that the MW2800 series does not have a software operation panel resident on the screen.

1.3. MW5800 Series

The MW5800 series is a model with standard screen. The appearance and screen of the system are as follows. It is identical to the main screen area of the MW2200. Also the button positions for all functions are the same.



2. Group Description

The system is divided into five groups, which are monitoring group, editing group, compensation group, diagnosis group and maintenance group, which are described as follows:

2.1. Monitoring Group

This group is mainly used to monitor the machining information, motor load, program restart, MDI program input, machining settings of the machine and execution status of the machining program. All buttons in this group are listed as follows:

- Switch coordinates: Switch the displayed coordinates, which are displayed as program coordinates → relative coordinates → machine coordinates → residual movements, and repeat the cycle.
- Machining setting: Provides machining time accumulation clearing, machining parts accumulation clearing, setting the current machining workpieces and setting the maximum machining workpieces.
- Open old files: Open the machining program existing in the system for editing and processing, which is the same as the opened files in the edit mode.
- U-disk import: The processing program is imported into the system through the U-disk, which is the same as the U-disk import in the edit mode.
- MDI: Opens the simple programming interface of MDI mode.
- Graph: Displays a graphical preview of the current machining program.
- Scan code to open files: Display the input box to open files by of scanning code. For detailed instructions, please refer to 3.1.
- Program restart: Open the setting interface of the breakpoint restart of the machining program. For detailed instructions, please refer to 3.2.
- Variables: Displays the current values of # variables and @ variables used in the machining program.
- Processing information: Display the current system G code status, MST code status and the cutter compensation and cutter number in use.
- Load: Displays the current motor load status. This function is limited to bus drives.

2.2. Edit Group

This group is mainly used for machining program editing, macro program editing, processing program file management and machining program preview. All buttons in this group are listed below:

- Open old files: Open the machining program existing in the system for editing and processing.
- Archive: Save the modified machining program.
- Graphics: A graphical preview of the machining program.
- Editing: Perform editing actions related to the machining program, such as copying, pasting, replacing, etc.
- File management: Import and export of machining programs. Please refer to 3.3 for detailed

instructions.

- Sorting processing: Provides the user to process the machining program after scheduling. For detailed instructions, please refer to 3.4.
- Graphic setting: Set the relevant parameters when the program graphics are previewed.
- Manufacturer Macro: Edit the macros used inside the system.
  ※This button needs to be switched to level 5 to appear.
- Open new files: Open a new processing program on the system for users to write.

2.3. Compensation Group

This group is mainly used for coordinate system setting, tool compensation setting, automatic tool setting, centering function and tool changer setting. All buttons in this group are listed below:

- Tool management: Set the tool length compensation and wear compensation, that is, set the tool compensation table.
- Teaching input: Set the mechanical coordinate of the corresponding axis into the selected coordinate system.
- Relative Clearing: Clear relative coordinates.
- Centering function: Set the origin position of the system coordinate system by finding the optical edge of the workpiece.
- Automatic tool setting: Automatic tool setting function is performed according to the parameters set on the page. For detailed instructions, please refer to 3.5.
- Gang tool setting: Set the relevant parameters for the gang tool changer. For detailed instructions, please refer to 3.6.1.
- Bamboo hat type type tool magazine: Set the relevant parameters for the bamboo hat type type tool magazine. For detailed instructions, please refer to 3.6.2.
- Drilling setting: Set the offset of the drilling tool magazine. For detailed instructions, please refer to 3.6.3.

2.4. Diagnosis Group

This group is mainly used to view system warnings, alarms, PLC ladder diagrams, IO point status, system information and operation history. All buttons in this group are listed below:

- Alarm: Displays the current alarm status of the system.
- Warning: Displays the current warning status of the system.
- Ladder Diagram: Displays PLC ladder diagram that is currently running of the system.
- IOCSA: Displays the status of each point of I, O, C, S, and A used in the PLC of current system.
- Timer and counter: Displays the status of the timer and counter used internally by the system PLC.
- System Information: Display internal current information about the system. Currently, it provides mechanical coordinates, encoder values, servo error values, origin grille quantity, system final output commands and handwheel encoder values.

- Alarm history: Displays the alarm process that has occurred in the system.
- Operation history: Display the relevant operation process of the user's operating system.

2.5. Maintenance Group

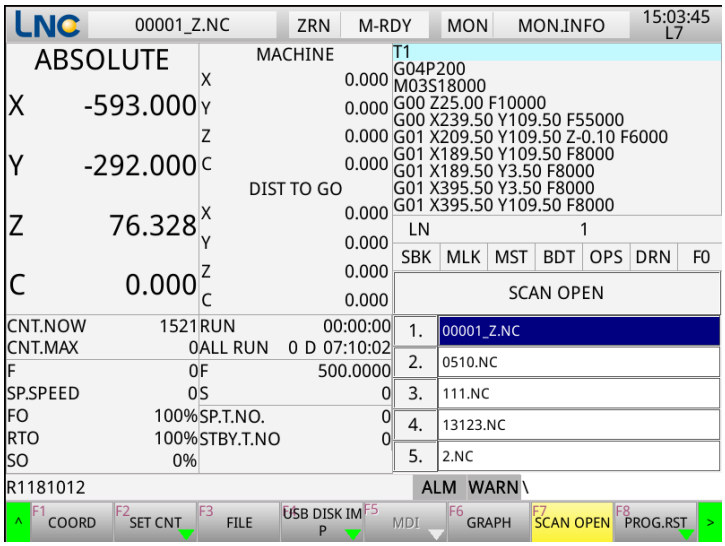
This group is mainly used to set system parameters, system backup, system upgrade, IO point setting, network setting, language setting and quick restore. All buttons in this group are listed below:

- User parameters: Set the relevant parameters of the PLC writing function. For detailed instructions, please refer to 5.1.
- Network setting: Set the IP related information for the system to connect with external devices.
- Identity change: User level change, the password of level 3 defaults to 7777.
- Hardware Contact: Set the corresponding address of the system and I/O board card and display the current I/O usage status.
  ※This button needs to be switched to level 5 to appear.
- Parameters: Set the system built-in standard parameters, such as: processing effect debugging, hardware usage, axial motion function, etc., please refer to 5.2 for detailed instructions.
- Backup: Perform system data backup operation. For details, please refer to 3.7.
- System update: Perform system software version update operation. For details, please refer to 3.8.
- Quick Restore: Perform quick backup and quick restore of system data. For detailed instructions, please refer to 3.9.
  ※This button needs to be switched to level 5 to appear.
- Service life: Set up and cancel the installment of the machinery factory and the agent.
- Language setting: Switch the language system. For details, please refer to 3.10.
- Password change: User level password modification.
- Version information: View the software version number and version information used in the current system.
- System function: View the internal functions that are currently open in the system.
  ※This button needs to be switched to level 5 to appear.
- Project setting: Set the internal parameters corresponding to each type of system according to different system types.
  ※This button needs to be switched to level 5 to appear.

3. Screen Function Description

3.1. Scanning Code to Open Files

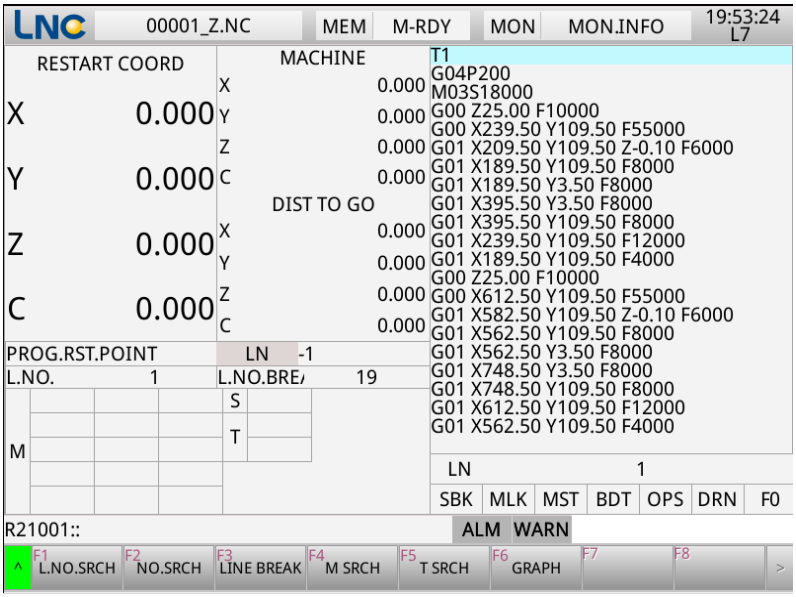
- Function path: monitoring group > scanning code to open files



1. The function of scanning code to open files provides 5 sets of temporary storage functions for pre-scanning files.
2. Use the up and down buttons to select the name of the program files to be executed. Press the Enter key (Enter) to open the corresponding files.
3. If there is no corresponding file, the system will issue a "Processing program does not exist" alarm.
4. If it's required to delete the file name already entered, press the Backspace button on the keyboard or the CAN button on the MDI (Operation Panel) to delete the entered file name.

3.2. Breakpoint Re-start

➢ Function Path: Monitoring Group > Program Re-start



1. The breakpoint re-start function is divided into 5 ways to search for the restarting point.
   i. Line number search: Search for the breakpoint based on the line number of the machining

program entered by the user.

ii. Number search: The tool breakpoint search is performed according to the machining program N number input by the user.

iii. Breakline search: The breakpoint search is performed according to the breakpoint recorded by the system.

iv. M code search: The breakpoint search is performed according to the M code input by the user.

v. T code search: The breakpoint search is performed according to the T code input by the user.

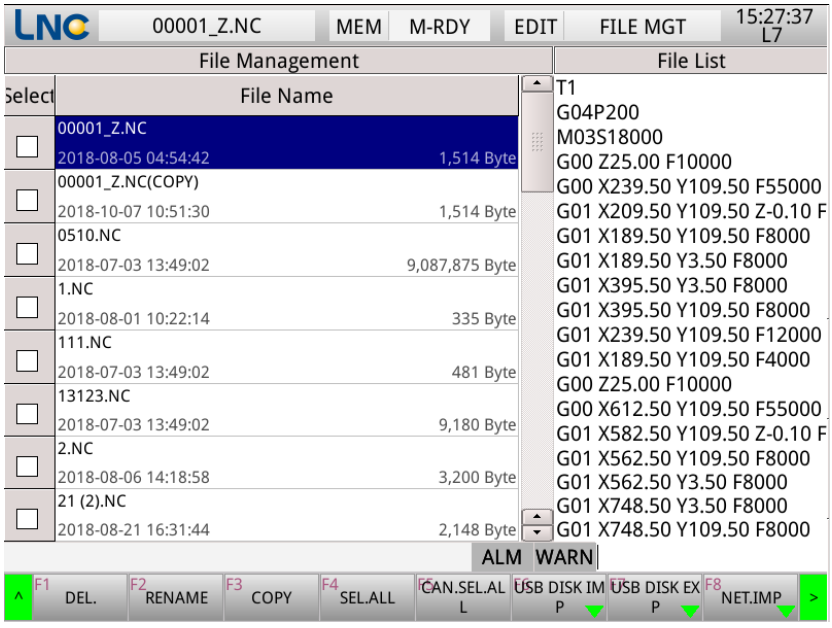
2. After searching for the specified position, press the **start machining** to start the breakpoint position recovery action, and the system will move to the top of the breakpoint.
3. The height above the breakpoint is set by user parameter 8052.
4. After moving to the top of the breakpoint, machining startup is pressed again, and the program processing will start.
5. Note：

i. Before using the breakpoint to restart, it must be confirmed that the machine has returned to the origin, otherwise the function will not take effect (the set breakpoint cannot be found).

ii. When restarting with a breakpoint, it's required to switch the operating mode to automatic (MEM) mode.

3.3. File Management

➢ Function Path: Edit Group > File Management



This function is used to manage the machining procedures in the system, which mainly divided into three parts.

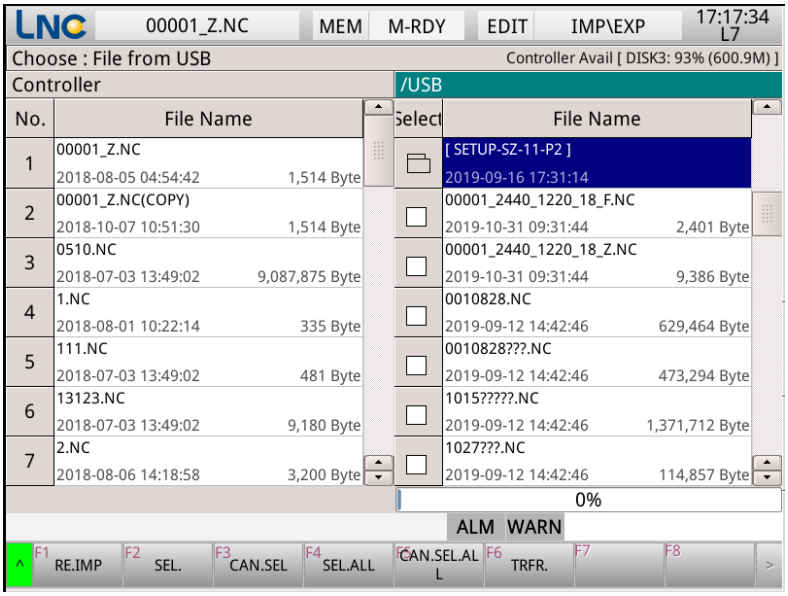
3.3.1. Delete / rename / copy

- Delete: Used to delete the machining program owned by the system. There are three ways to select files: single selection, multiple selection and select all.
- Rename: Rename the file name of the selected program in the system.
- Copy: Copy the selected machining program into a new file, and the new machining program needs to be named during the copying process.
- Select All: Select all machining programs in the system.
- Deselect All: Cancels all selected machining programs.

3.3.2. U-disk import / export

i. After the user inserts the U-disk into the USB port of the system, the U-disk internal processing program is imported into the system through the U-disk import and export function, or the processing program in the computer is exported to the U-disk.

ii. As shown in the figure below, the left side of the screen is all the machining programs in the system, and the right side is all the machining programs in the folder selected in the U disk.

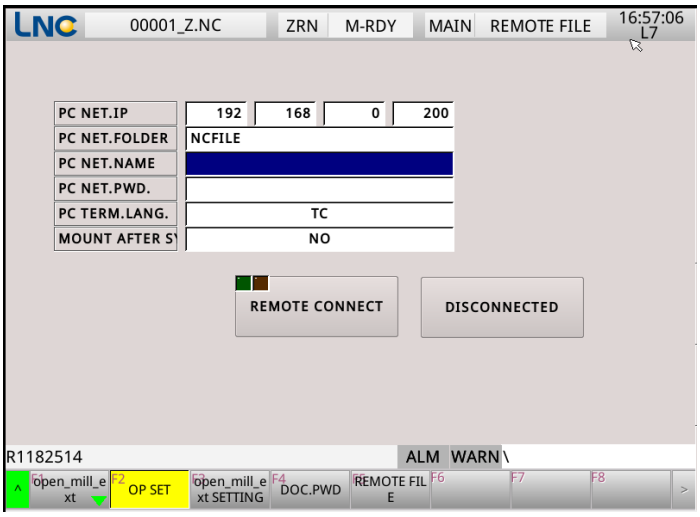


3.3.3. Network disk import / export

i. Users can directly import the machining program from the computer to the system or export the machining program in the system to the computer through the sharing method of network disk.

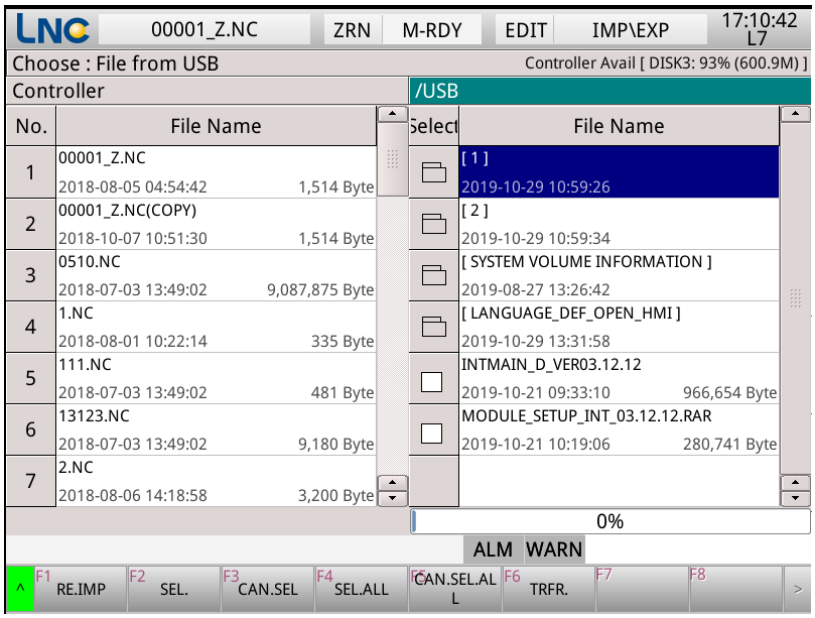
ii. It's required to set the computer IP and computer folder name to provide the shared folder on the system. The parameter setting path is: Maintenance Group > Project Settings > Shared Document (require to switch to level 5).

iii. The user name and passwords of the PC may not be input (the shared folder on the computer side cannot be set to use the passwords).



iv. When the network disk import/network disk export is pressed, the system will automatically online. After the connection is successful, an  icon will appear in the system title bar, indicating that both parties have completed online.

v. As shown in the figure below, the left side of the screen is all the machining programs in the system, and the right side is all the machining programs in the shared folder of the computer.



3.4. Scheduling Machining

➢ Function Path: Edit Group > Scheduling machining

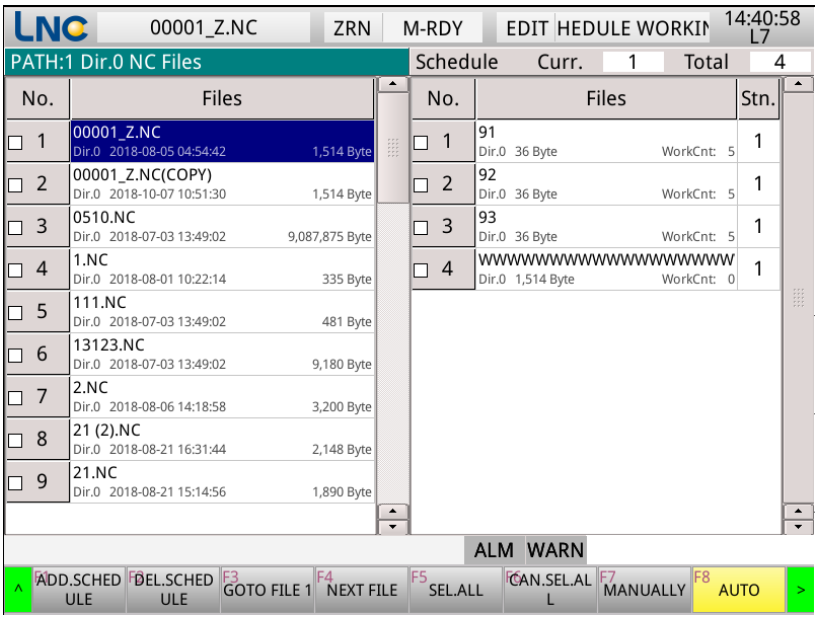
1. The scheduling processing screen is as follows, divided into left and right two screens, the left screen shows all current machining programs of the system; the right screen shows the machining program and scheduling sequence selected for scheduling.
2. There are three modes of scheduling processing, which are described as follows:

- Manual starting: Using the scheduling processing, the system will automatically start the next

machining program of the schedule after each execution of the machining program, but the user must manually press to start machining.

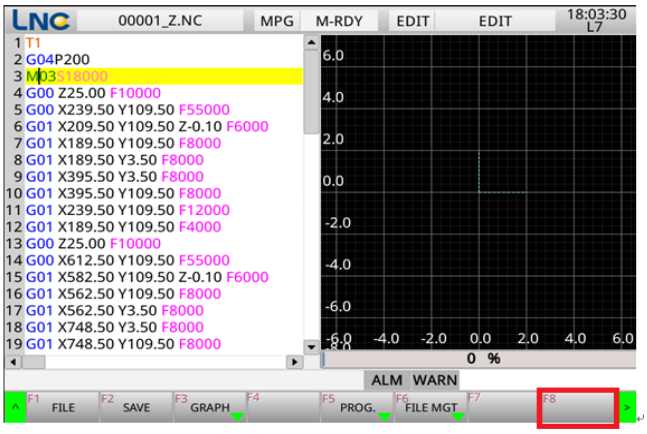
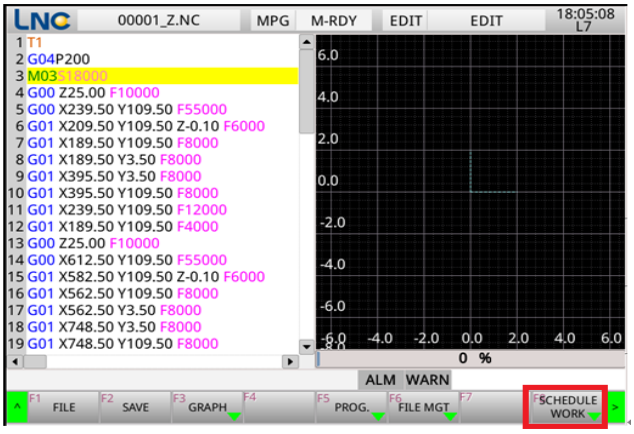
- Automatic start(discontinuous cycle): Open the user parameters → system value R8053 set 2 (cycle), The system will automatically start the next processing program of the schedule after each execution of the processing program, and automatically start processing until all the scheduled programs are completed then stop.
- Automatic start(continuous cycle): Open the user parameters →system value R8053 set 4 (automatic cycle)

  Each time the machining program is executed, the system automatically starts the next machining program of the schedule and automatically starts the machining until the reset button or the program pause button is pressed.

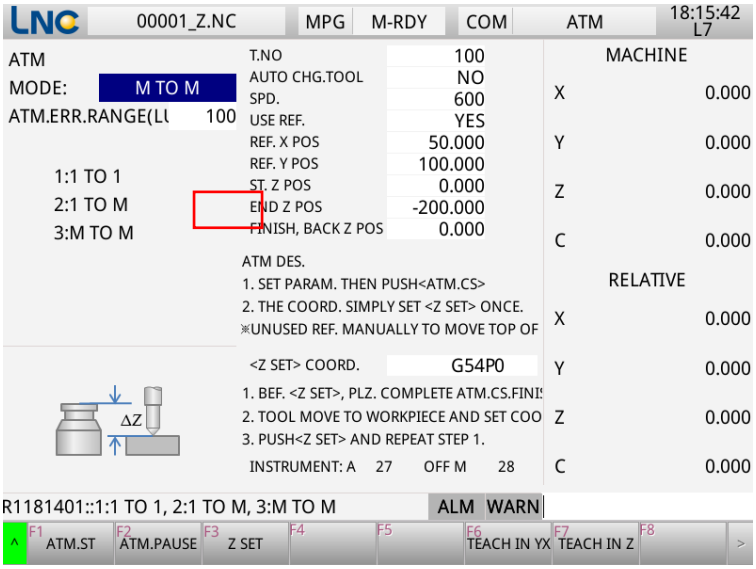


※ Note：

- The scheduling processing function only needs to be enabled after the parameter is turned on. It is necessary to start the parameter → operating parameter R1181393 to set 1 (enabled).
- The use path will appear when enabled, as the below image:

Function not enabled	Function Enabled
	
F8 position has no scheduling processing buttons	F8 position has s cheduling processing buttons

3.5. Automatic Tool Setting



➢ Function Path: Compensation Group > Automatic Tool Setting

1. The automatic tool setting function provides three tool setting modes as follows:
   - Single-tool single workpiece: only one tool and one workpiece are processed during machining.
   - Single-tool multi-tasking workpiece: Only one tool is used for machining, but there are different machining workpieces.
   - Multi-tool multi-tasking workpiece: tool change will be carried out during machining, and there will be a variety of different machining workpieces. Generally, woodworking machines are of this type.
2. Multi-tool multi-tasking tool-setting steps：
   i. Perform the tool-setting first (press the tool-setting on the screen to start).
   ii. The tool-setting operation is started for the parameters set on the screen.
   iii. Manually move the tool to the workpiece surface (or the machining platform) after the tool-setting

is completed.

iv. Set the Z drop (press the Z drop on the screen, only the first tool needs to be set).

3. Note：

i. The Z drop of the first tool must be set, and the user can modify the coordinate system of the Z drop (The preset is G54).

ii. It is not necessary to set the Z drop from the second tool, and only the tool-setting action is required.

iii. When using the tool compensation, the machining program must use the coordinate system set by the Z drop (The preset is G54).

iv. If different workpiece surfaces are used, the corresponding Z-drop coordinate system needs to be modified.

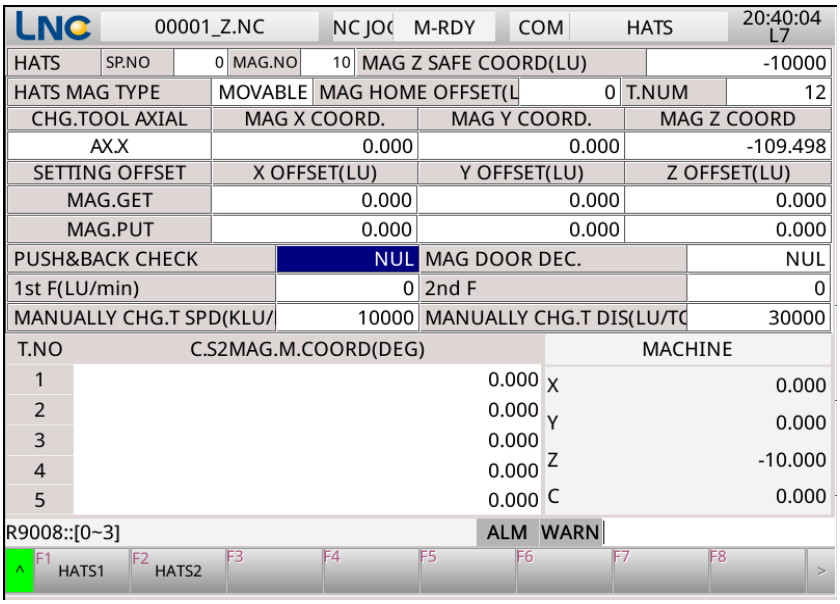
3.6. Tool Magazine Setting

3.6.1. Gang tool setting

➢ Function Path: Compensation Group > Next Page> Gang Tool Setting

1. If the gang tool magazine is used, the related settings of tool magazine can be performed via this page.
2. The tool-changing coordinate of gang tool is the actual tool-changing position. If it is necessary to perform the tool-changing offset, it needs to be set in the offset parameters.
3. Note: The value of the first speed and second speed of the tools must be set, otherwise the system will give an alarm when the tool is changed.

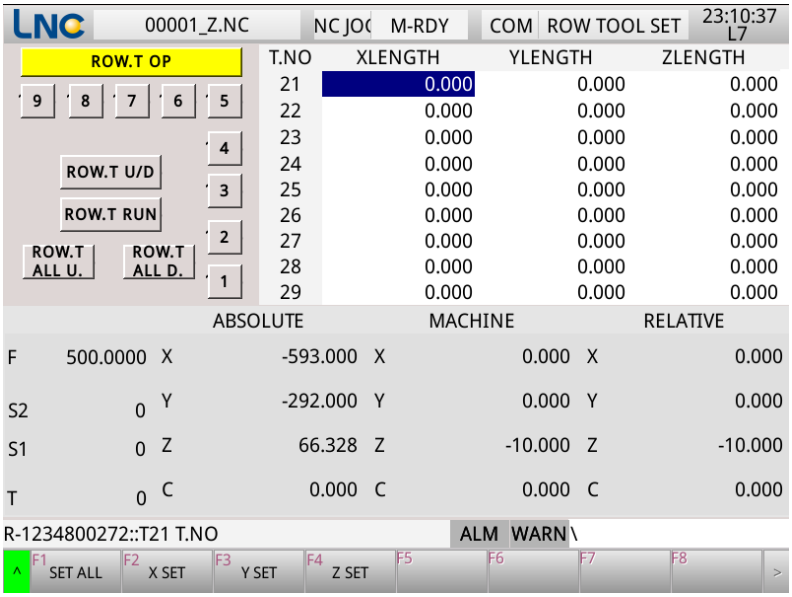
3.6.2. **Carousel style tool magazine setting**



➢ Function Path: Compensation Group > Next Page> Carousel style tool magazine

1. If the Carousel style tool magazine is used, the related settings of tool magazine can be performed via this page.
2. The bamboo hat type tool-changing coordinates are the actual tool-changing positions. If the tool-changing offset is required, it needs to be set in the offset parameters.
3. Note：The value of the first speed and second speed of the tools must be set, otherwise the system will give an alarm when the tool is changed.

3.6.3. **Drilling setting**



➢ Function Path: Compensation Group > Next Page> Drilling Settings

1. If the drilling tool magazine is used, you can set the drilling offset through this page.

2. This screen provides 9 straight drill control interfaces, users can click the mouse or use the arrow keys + ENTER button to perform related motion control.
3. The drilling tool number starts from T21, the straight drill is T21 – T40, the horizontal drill is T41 – T60, and the saw blade is T61.

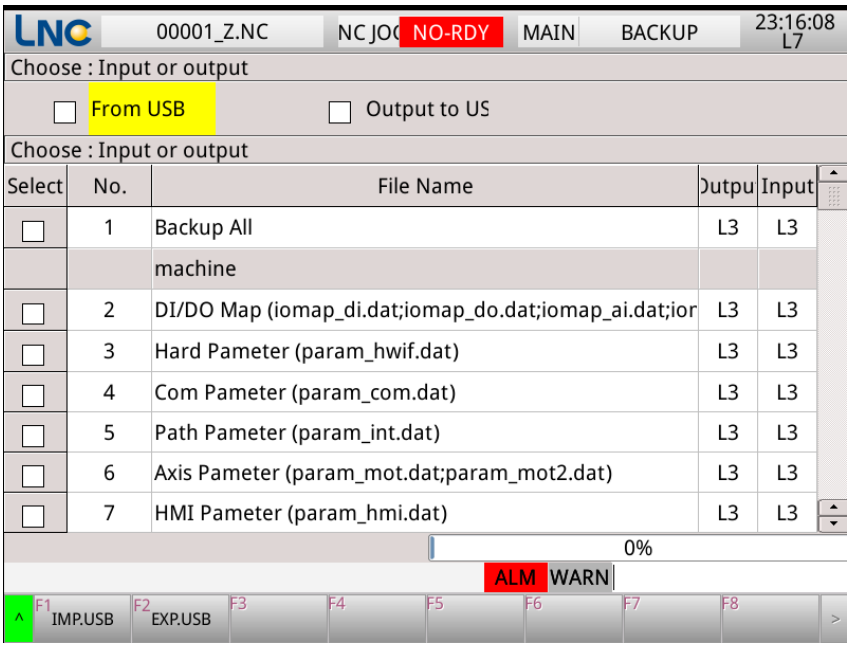
3.6.4. Tool number setting of the Carousel style tool magazine

➢ Function Path: Maintenance Group > User Parameters > Project Parameters

1. Set the user parameter first 9005: the Carousel style tool magazine sets the origin spindle tool number, 9006: the Carousel style tool magazine sets the origin standby tool number.
2. In the origin mode, I407 is triggered: the tool number corrects the input signal.
3. The system will immediately set the spindle tool number and the standby tool number to the parameters and set values.

3.7. Backup

➢ Function Path: Maintenance Group > Backup

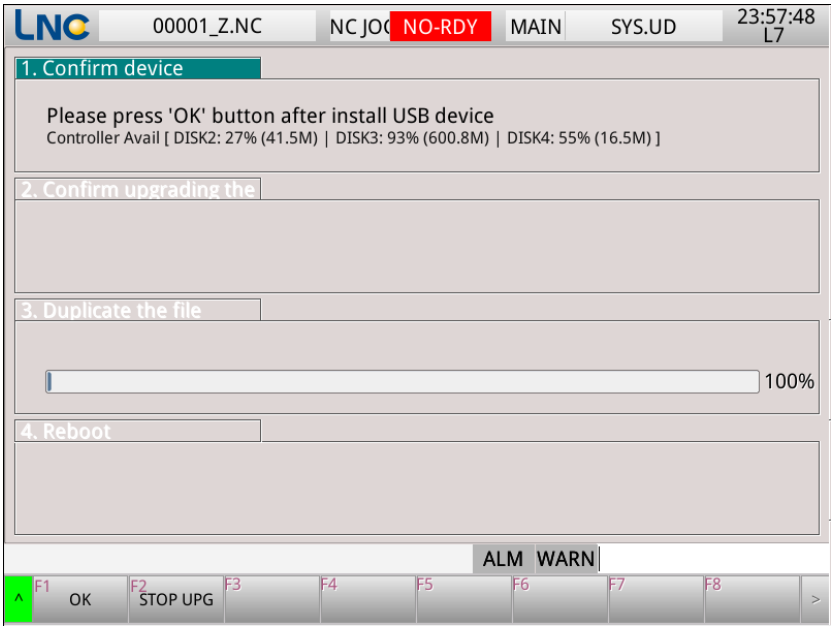


1. Use U-disk for system backup and restore actions:
   i. Backup: After inserting the USB flash drive, check **the export to USB**, select **all data backup**, press the **transfer** and select the U-disk folder. After selecting it, press **OK** to start the backup and wait for a few seconds until the system prompts the transfer to complete. After the backup is completed, the backup folder will appear, and the files inside will be the backup files.
   ii. Restore: After inserting the USB-disk, check the **USB import**, select the upper layer folder where the backup folder is placed in the USB-disk, and press the **transfer** to start restoring the system data after the selection. After the restoring is complete, you must restart the system to restore the original backup state.
2. Note：This feature must be performed after an emergency stop has been pressed to prevent the

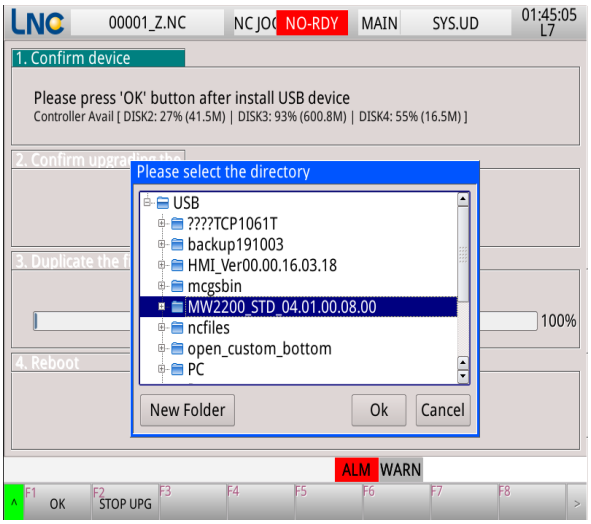
machine from unpredictable conditions during the backup process.

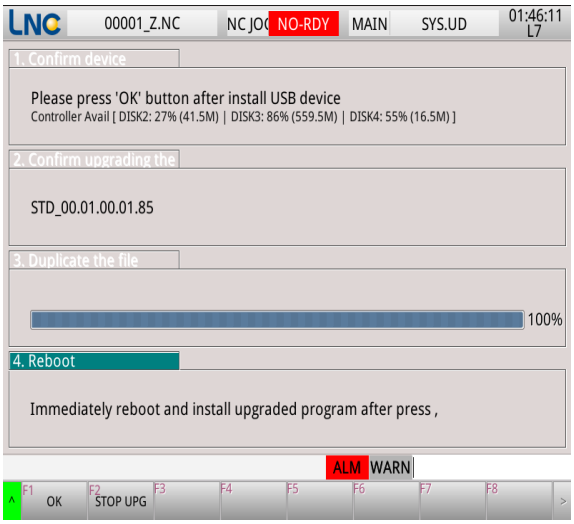
3.8. System Update

➢ Feature Path: Maintenance Group > System Update



1. Use a U-disk to update the system. Insert the U-disk into the system and press **OK**. The system will immediately mount the U-disk. After the mounting is successful, the U-disk content will appear. If not, the system will display a prompt of **failure to mount the USB**.
2. After selecting the folder where the upgrade package is placed, press **OK**.
3. Confirming the location of the upgrade version will result in the software version to be upgraded. The upgrade file will be copied after **OK** is pressed again.
4. After the copy is complete, press **OK** to automatically restart the system and complete the system update.

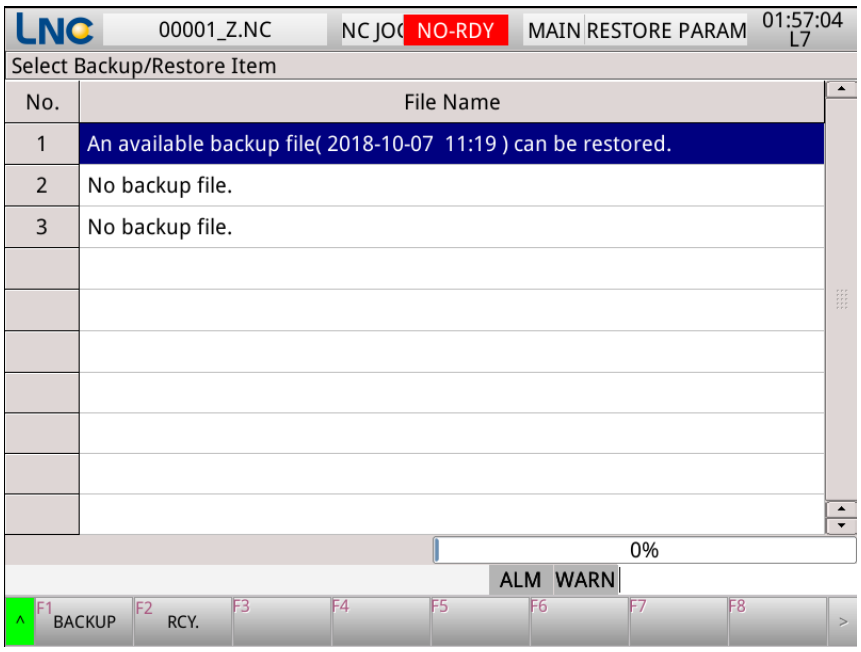




5. Note：This function must be performed by pressing the emergency stop to prevent the machine from unpredictable conditions during the system update process.

3.9. Quick Restore

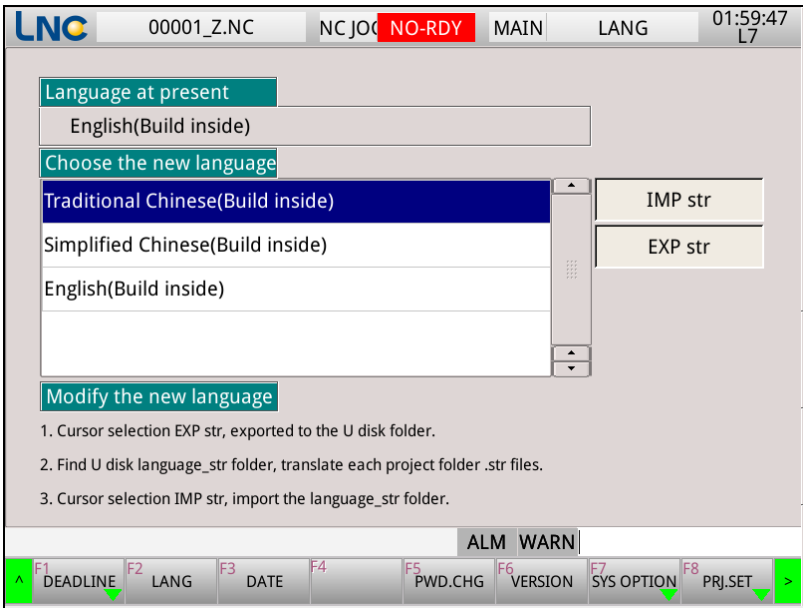
➢ Function Path: Maintenance Group > Quick Restore (It's required to switch the system level to 5)



1. The system provides quick restore and backup functions, allowing the machinery factory to set the factory default value when the machine is shipped. When the user is in operation error, it can quickly restore the factory default value of the machiney factory, reducing the need for personnel to be on-site for after-sales service.
2. Select the number to backup/restore, press the Backup/Restore button, and wait a few seconds for the operation to complete.
3. Note：This function must be performed by pressing the emergency stop to prevent the machine from unpredictable conditions during the backup/restore process.

3.10. Language Setting

➢ Function Path: Maintenance Group > Next Page> Language Settings



There are three languages in the system, which are Traditional Chinese, Simplified Chinese, and English. Select according to your needs. Use the up and down buttons on the keyboard to select the language and press ENTER. After waiting for 10 seconds, the language will be changed immediately without restarting the system.

4. Built-in Function Description

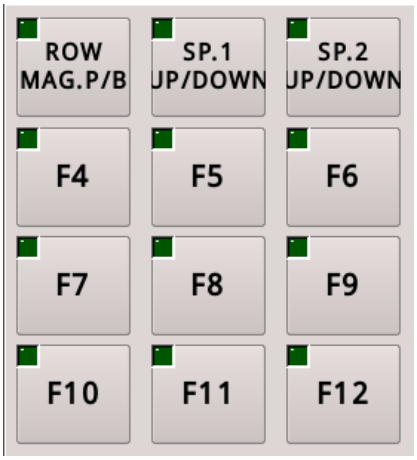
4.1. Automatic Loading And Unloading

1. The system provides three operating procedures of standard automatic loading, automatic uploading and automatic loading and unloading.
2. There are two ways to use automatic loading. The first type is M-code calling, the M-code number is M15, and the second type is one-key loading.
3. There are two ways to use automatic uploading. The first type is M-code calling, the M-code number is M17, and the second type is one-key uploading.
4. There are two ways to use automatic loading and unloading. The first type is M-code calling, the M-code number is M16; the second type is one-key loading and unloading.
5. The relevant parameters setting of the loading and unloading are located in the project parameters of the user parameters.

Parameter No.	Parameter Content
8319	[Unloading function] Feeding machine detection time (seconds)
8324	[Unloading/dusting function] Pushing the dusting cylinder up and down in-place to check (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)

8331	[Unloading function] Uploading movement speed (KLU/MIN)
8332	[Unloading function] Mechanical coordinate (LU) of the starting point of the uploading
8333	[Unloading function] Machine coordinate (LU) at the end point of the uploading
8334	[Loading / unloading function] Loading and unloading direction (0:X axis, 1:Y axis)
8335	[Loading function] Loading movement speed (KLU/MIN)
8337	[Loading function] Mechanical coordinate (LU) of the starting point of loading of the first stage
8338	[Loading function] Mechanical coordinate (LU) of the end point of loading of the first stage
8339	[Loading function] Mechanical coordinate (LU) of the starting point of loading of the second stage
8340	[Loading function] Mechanical coordinate (LU) of the end point of loading of the second stage
8341	[Loading function] Loading cylinder up and down in-place to check (0: no check, 1: up in-place, 2: down in-place, 3: up and down in-place)
8342	[Loading function] Loading and unloading in-place to check (0: no inspection, 1: loading inspection, 2: uploading inspection, 3: loading and uploading inspection)

6. Note：When using the one-key operation function, you need to select the relevant function in the **optional function buttons**, as shown below.



4.2. Spindle Function

4.2.1. Spindle speed correlation

1. The system provides the judgment method of the spindle speed arrival and zero speed arrival. The parameter setting method can be used to select the method of calculating the number of seconds or the system spindle speed arrival and zero speed arrival can be notified by using the external signal.

2. The parameter setting is located in the system value of the user parameters.

Parameter No.	Parameter Content
8312	Waiting time for arrival of first spindle speed (seconds, -1: external signal notification)
8313	Waiting time for arrival of second spindle speed (seconds, -1: external signal notification)
8314	Waiting time for arrival of third spindle speed (seconds, -1: external signal notification)
8315	Waiting time for arrival of forth spindle speed (seconds, -1: external signal notification)
8343	[Spindle function] Waiting time for arrival of zero speed of first spindle (seconds, -1: external signal notification)
8344	[Spindle function] Waiting time for arrival of zero speed of second spindle (seconds, -1: external signal notification)
8345	[Spindle function] Waiting time for arrival of zero speed of third spindle (seconds, -1: external signal notification)
8346	[Spindle function] Waiting time for arrival of zero speed of forth spindle (seconds, -1: external signal notification)

3. The M-code setting of the spindle speed related is located in the M-code setting in the user parameters.

Parameter No.	M-code Content	Default Value
9421	[M-code Setting] The second spindle rotates forward	103
9422	[M-code Setting] The seond spindle reverses	104
9423	[M-code Setting] The second spindle stops	105
9428	[M-code Setting] The third spindle rotates forward	113
9429	[M-code Setting] The third spindle reverses	114
9430	[M-code Setting] The third spindle stops	115
9431	[M-code Setting] The forth spindle rotates forward	123
9432	[M-code Setting] The forth spindle reverses	124
9433	[M-code Setting] The forth spindle stops	125

4.2.2. Spindle cylinder

1. The system provides the function of judging whether the inspection is in-place when using the spindle cylinder. If there is no inspection mechanism, the function can be turned off by parameters.
2. The parameter setting is located in the system value in the user parameters.

Parameter No.	Parameter Content
8070	Inspection form of the first spindle up and down in-place (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8071	Inspection form of the second spindle up and down in-place (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8072	Inspection form of the third spindle up and down in-place (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8073	Inspection form of the forth spindle up and down in-place (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)

3. The M-code setting of spindle cylinder related is located in the M-code setting in the user parameters.

Parameter No.	M-code Content	Default Value
9424	[M-code Setting] First spindle up	26
9425	[M-code Setting] First spindle down	25
9426	[M-code Setting] Second spindle up	41
9427	[M-code Setting] Second spindle down	40
9434	[M-code Setting] Third spindle up	43
9435	[M-code Setting] Third spindle down	42
9436	[M-code Setting] Forth spindle up	45
9437	[M-code Setting] Forth spindle down	44

4.2.3. Spindle Suction Hood

1. The system provides the function of judging whether the inspection is in-place when using the spindle suction hood. If there is no inspection mechanism, the function can be turned off by parameters.
2. The parameter setting is located in the system value in the user parameters.

Parameter No.	Parameter Content
8320	Spindle 1 suction hood up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8321	Spindle 2 suction hood up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)

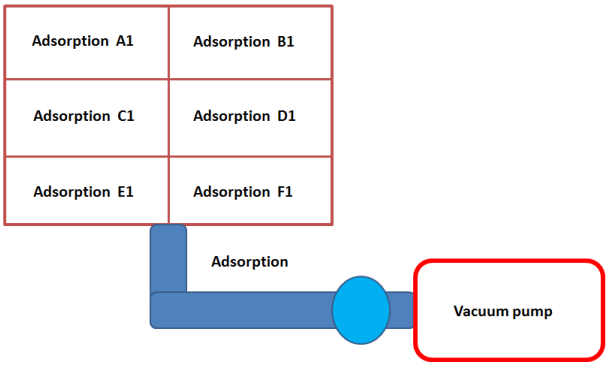
8322	Spindle 3 suction hood up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8323	Spindle 4 suction hood up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)

3. The M-code setting of spindle suction hood related is located in the M-code setting in the user parameters.

Parameter No.	M-code Content	Default Value
9438	[M-code Setting] First spindle suction hood up	140
9439	[M-code Setting] First spindle suction hood down	141
9440	[M-code Setting] Second spindle suction hood up	142
9441	[M-code Setting] Second spindle suction hood down	143
9442	[M-code Setting] Third spindle suction hood up	144
9443	[M-code Setting] Third spindle suction hood down	145
9444	[M-code Setting] Forth spindle suction hood up	146
9445	[M-code Setting] Forth spindle suction hood down	147

4.3. Adsorption Function

1. The system provides two types of adsorption, one is the partition adsorption control on the worktable surface; the other is the adsorption control of the entire worktable, as shown in the following diagram:



2. The adsorption related parameter setting is located in the system value in the user parameters.

Parameter No.	Parameter Content
8309	Maintenance time (ms) of vacuum destruction 1
8310	Maintenance time (ms) of vacuum destruction 2

3. The adsorption related M-code setting is located in the M-code setting in the user parameters.

Parameter No.	M-code Content	Default Value
9408	[M-code Setting] Adsorption 1 on	90
9409	[M-code Setting] Adsorption 1 off	91
9410	[M-code Setting] Adsorption 2 on	96
9411	[M-code Setting] Adsorption 2 off	97
9412	[M-code Setting] Vacuum pump 1 on	10
9413	[M-code Setting] Vacuum pump 1 off	11
9414	[M-code Setting] Vacuum pump 2 on	20
9415	[M-code Setting] Vacuum pump 2 off	21

4.4. Positioning

1. The system provides a total of 6 sets of positioning controls, which can be used by the user for related positioning, or for side pushing or back pushing during the loading and unloading actions.
2. The adsorption-related M-code setting is located in the M-code setting in the user parameters.

Parameter No.	M-code Content	Default Value
9400	[M-code Setting] Positioning 1 on	8
9401	[M-code Setting] Positioning 1 off	9
9402	[M-code Setting] Positioning 2 on	18
9403	[M-code Setting] Positioning 2 off	19
9404	[M-code Setting] Positioning 3 on	61
9405	[M-code Setting] Positioning 3 off	62
9406	[M-code Setting] Positioning 4 on	63
9407	[M-code Setting] Positioning 4 off	64
9456	[M-code Setting] Positioning 5 on	36
9457	[M-code Setting] Positioning 5 off	37

9458	[M-code Setting] Positioning 6 on	38
9459	[M-code Setting] Positioning 6 off	39

4.5. Dust-removal

4.5.1. Dust-removal of single station

1. The dust-removal actions in the single-station system is the same as the uploading actions. When used, it is to call M17 or trigger one-key uploading button.
2. The related parameters setting of single-station dust-removal is located in the project parameters in the user parameters.

Parameter No.	Parameter Content
8324	[Unloading/dust-removal function] Pushing dust-removal cylinder up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)
8325	[Dust-removal function] Dust-removal speed (KLU/MIN)
8332	[Unloading function] Mechanical coordinates of the starting point of uploading (LU)
8333	[Unloading function] Mechanical coordinates of the end point of uploading (LU)
8334	[Loading / unloading function] Loading and unloading direction (0:X axis, 1:Y axis)
8336	[Dust-removal function] Dust-removal direction (0: X axis, 1: Y axis)

4.5.2. Double-station dust-removal

4. There are two modes for double-station dust-removal.
    i. When the machine is standby, the dust-removal of the station will be performed immediately after pressing the dust-removal button corresponding to the station.
    ii. When machining, press the dust-removal button corresponding to the non-machining station, and wait until the tool lifting during machining (Z-axis position is greater than the set value), the dust-removal action will be performed in the non-machining zone. After the dust-removal is completed, the original state will be restored to continue the unfinished machining.
5. The setting of the relevant parameters of the double station dust-removal is located in the project parameters in the user parameters.

Parameter No.	Parameter Content
8324	[Unloading/dust-removal function] Pushing dust-removal cylinder up and down in-place inspection (0: no inspection, 1: up in-place, 2: down in-place, 3: up and down in-place)

8325	[Dust-removal function] Dust-removal speed (KLU/MIN)
8326	[Dust-removal function] Allow dust-removal Z-axis coordinates (LU) during machining
8327	[Dust-removal function] Machine coordinate (LU) of the dust-removal starting point of station 1.
8328	[Dust-removal function] Machine coordinate (LU) of the dust-removal end point of station 1.
8329	[Dust-removal function] Machine coordinate (LU) of the dust-removal starting point of station 2.
8330	Dust-removal function] Machine coordinate (LU) of the dust-removal end point of station 2.
8336	[Dust-removal function] Dust-removal direction (0: X axis, 1: Y axis)

5. Parameters Setting

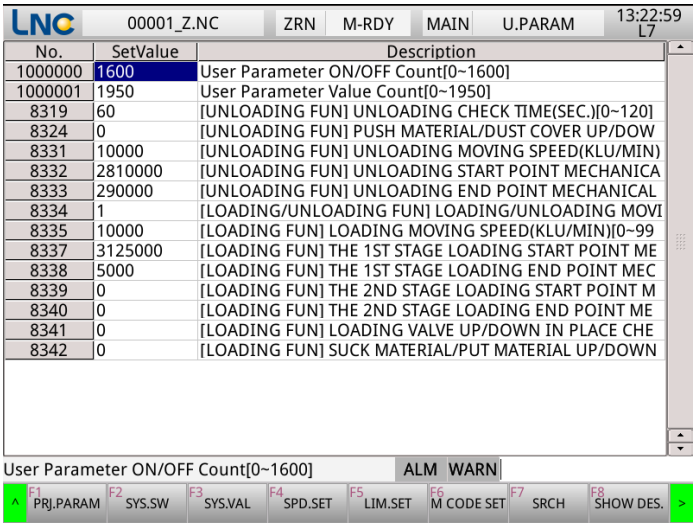
5.1. User Parameters

➢ Function Path: Maintenance Group > User Parameters (it's required to switch the system level to 5)

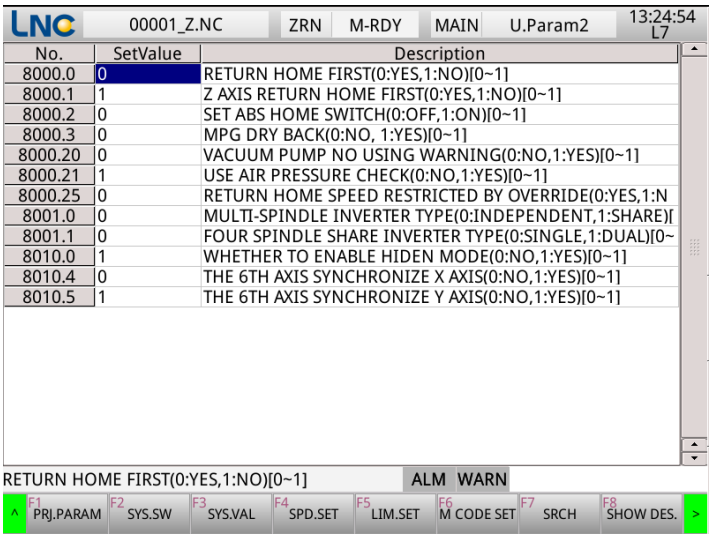
Note: The contents of the user parameters will vary depending on the model version, but not all models of the woodworking machine are the same.

User parameters are divided into 6 items, respectively, as follows:

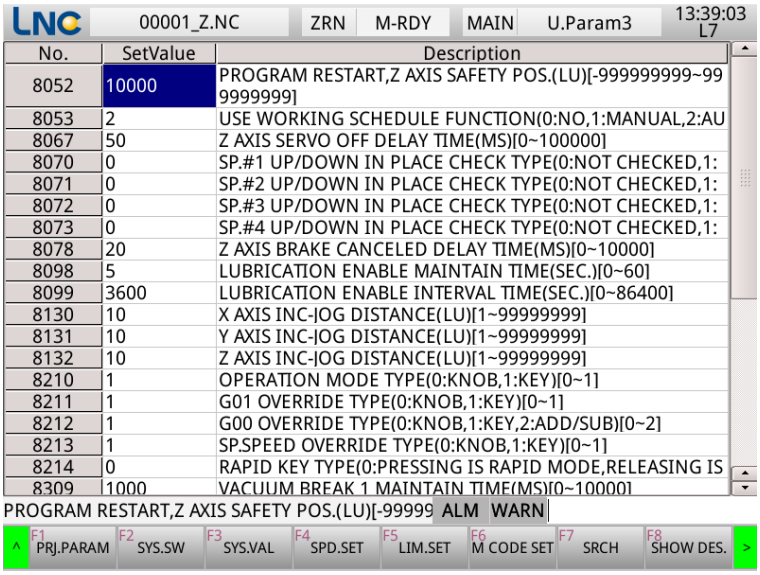
- **Project parameters:** The parameters in this area include loading and unloading parameters, tool magazine-related parameters, etc.



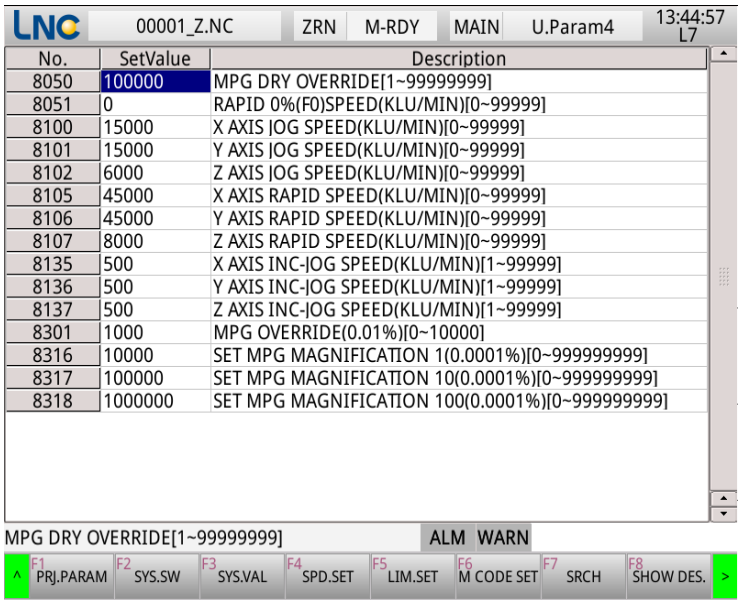
- **System switch:** switch setting of related functions in the system, for example: whether it's priority to return to the origin after power on, whether the Z axis is preferentially returned to the origin, whether to use air pressure detection, etc.



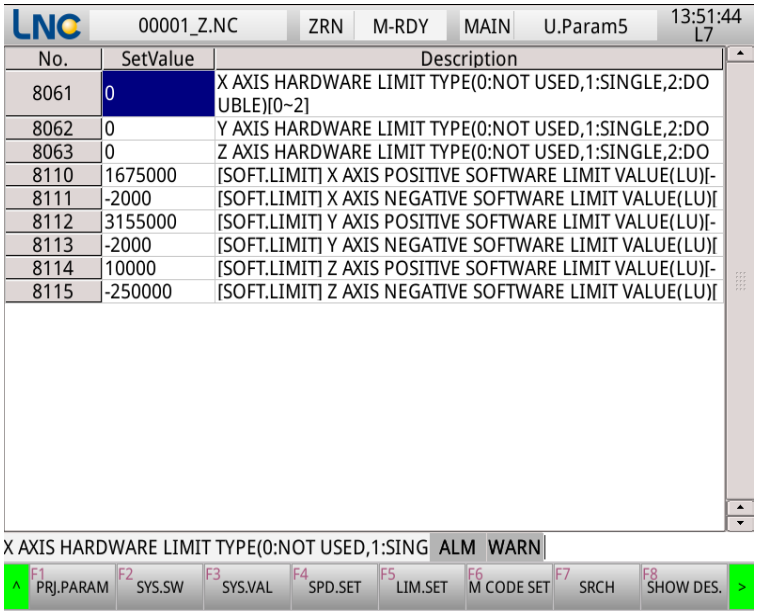
- **System value:** The setting of the relevant function value in the system, for example: the waiting time of the spindle speed arrival, the waiting time of the spindle zero speed arrival, the inspection type of the spindle up and down in-place, etc.



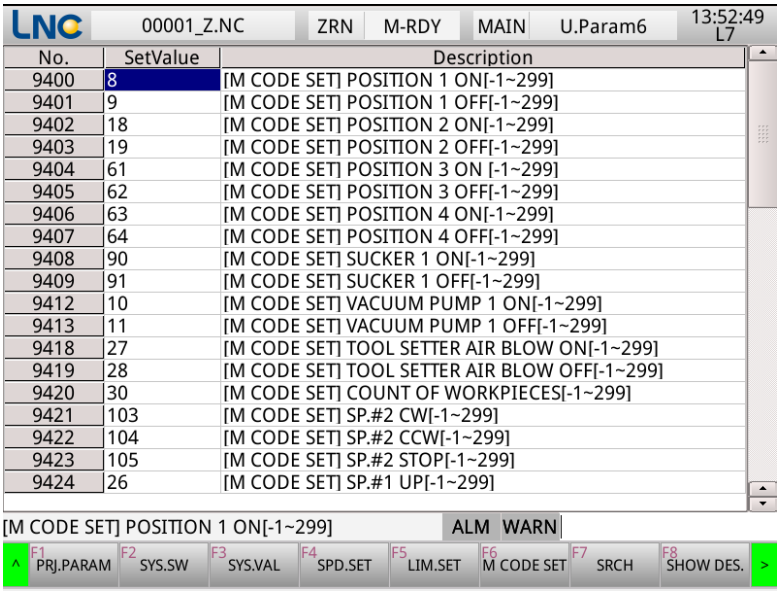
- **Speed：** The related speed setting of the manual mode in the system, for example: F0 speed, JOG speed, fast forward speed, etc.



- **Limit:** Set the limit type of the system hardware and the set value of the software limit of each axis.



- **M-code setting：** The M-code value setting of the woodworking machine related functions, for example: positioning on and off, vacuum pump on and off, adsorption on and off, etc. If the user forgets the M-code of related function, it can also be viewed on this page.



5.2. System Parameters

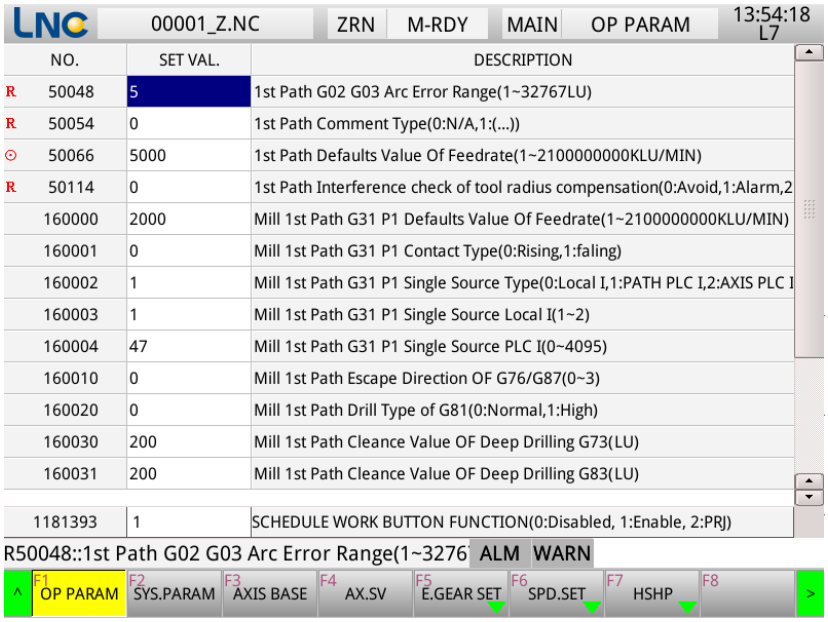
➢ Function Path: Maintenance Group > Parameters (It's required to switch the system level to 5)

The parameter setting is divided into 2 major parts and a total of 9 items, which are described as follows:

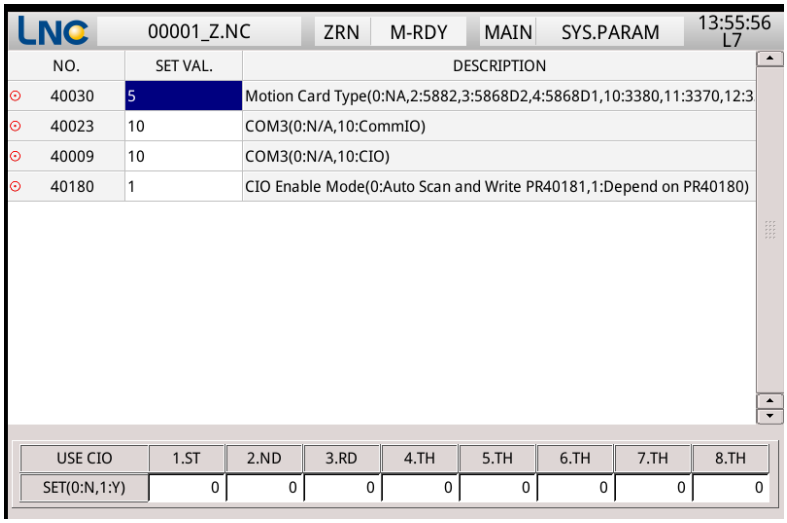
Part 1: Common parameter settings; this part sorts out the common parameters inside the system, which is convenient for machine debugging.

Part 2: Servo parameters and advanced parameters; this part is the drive parameters and all parameters of the system.

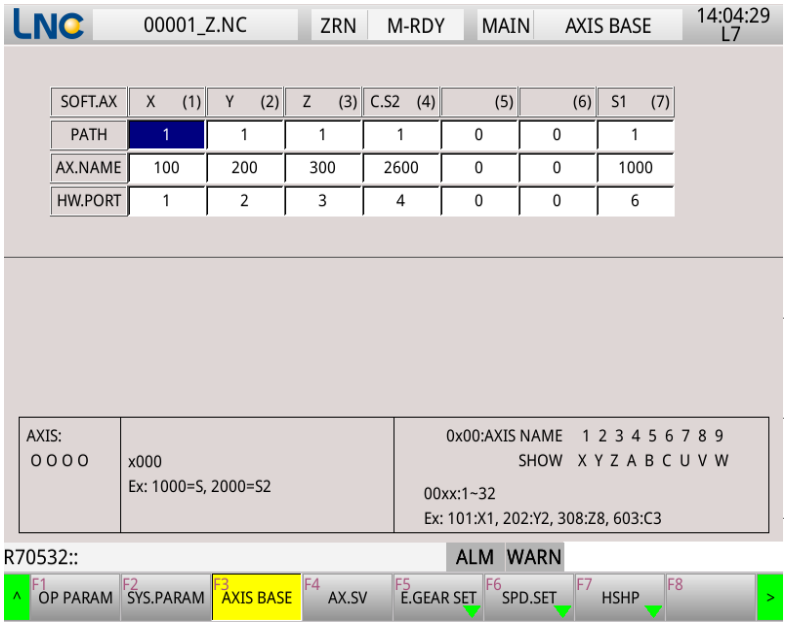
- **Operation parameters:** Set the relevant function parameters within the system, such as: preset feed rate, G31 related parameters, etc.



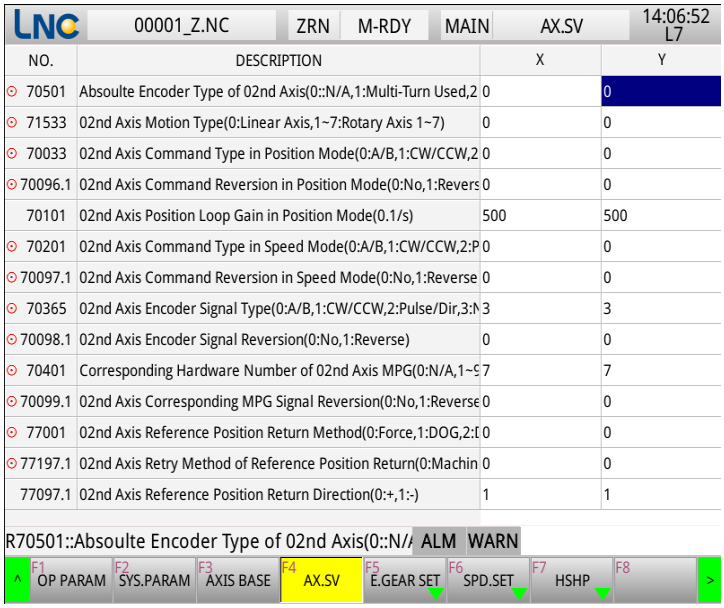
- **System parameters:** Set hardware connection parameters related to the system, such as hardware type (host type), CIO setting (bus IO board), etc.



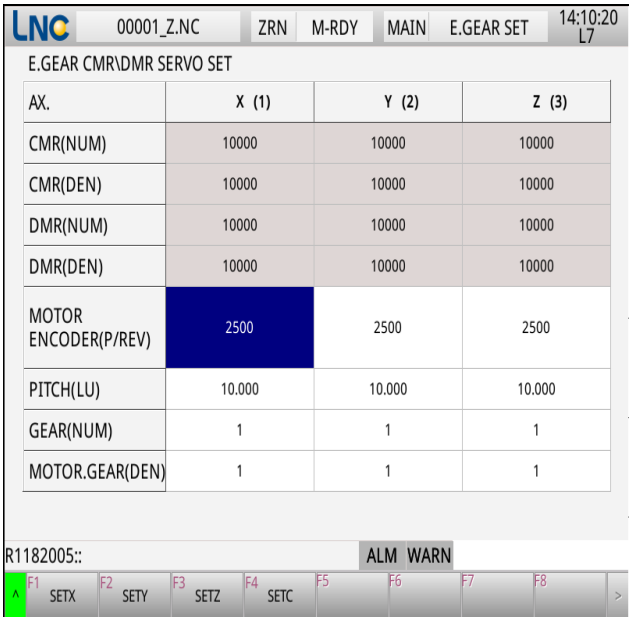
- **Axis group configuration:** Set the corresponding path of each axis, hardware axis number and axis name.

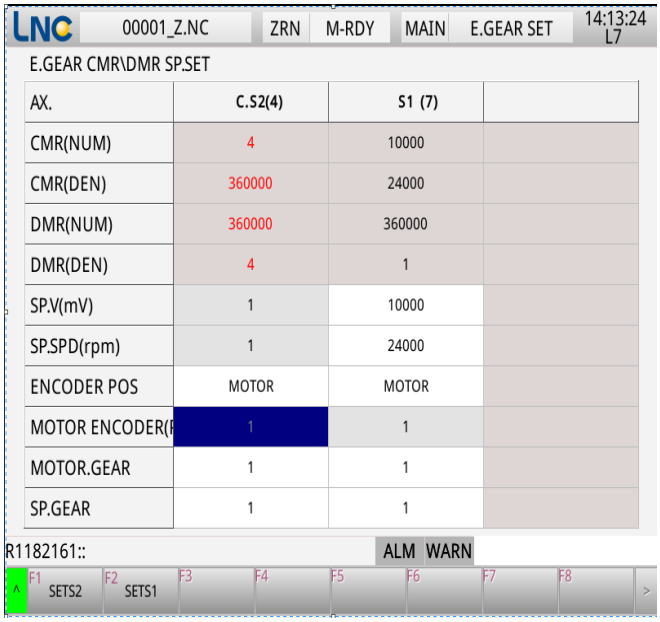


- **Setting of each axis:** Set the relevant parameters of each axial direction, for example: whether to use encoder, drive command format, origin searching method, etc.

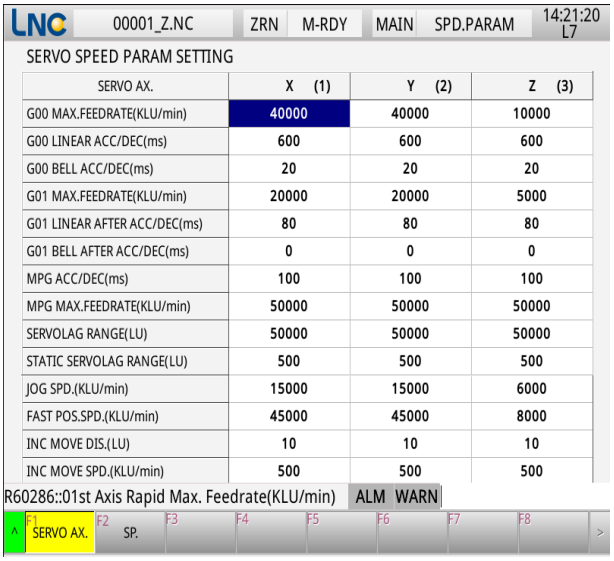


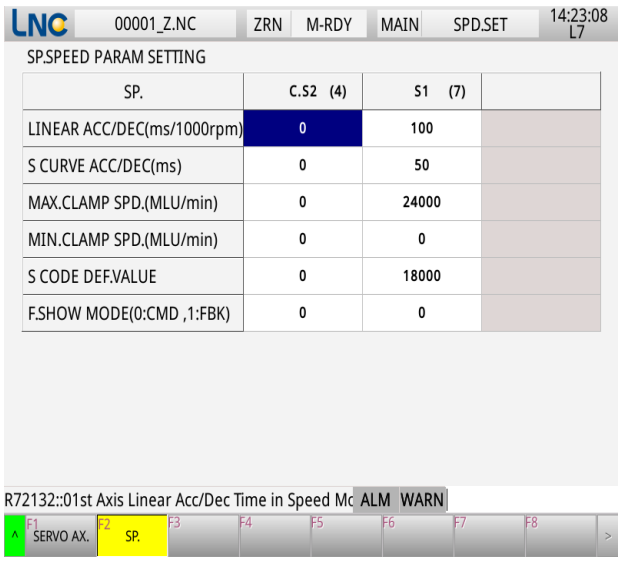
- **Gear ratio setting**：Set parameters such as gear ratio and screw pitch for each axial direction. The parameter page is divided into two parts, one for the servo axis and the other for the spindle.



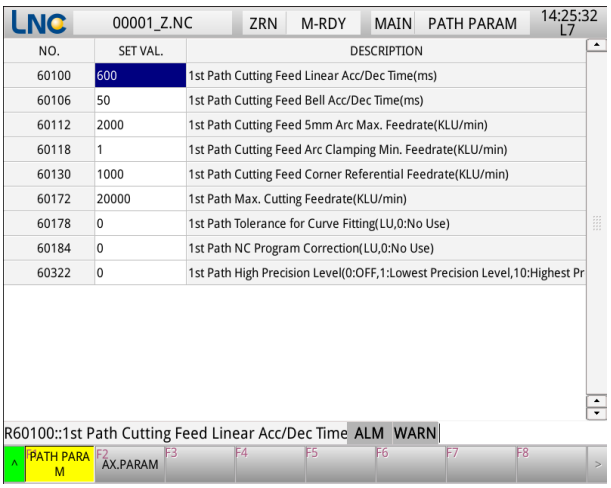


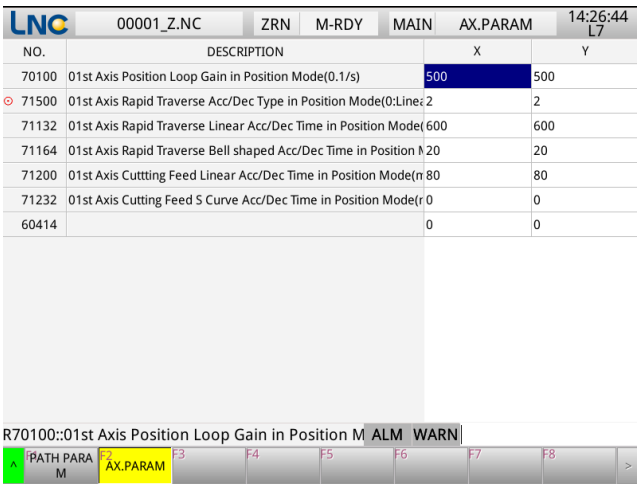
- **Speed setting:** Set the speed-related parameters for each axial direction, such as acceleration/deceleration time, G00 maximum speed, G01 maximum speed, and so on. The parameter page is divided into two parts, one for the servo axis and the other for the spindle.





- **High-speed & high-precision**：Set the relevant parameters of the machining effect. The parameter page is divided into two parts, one is the path parameters and the other is the axis parameters.





- **Servo parameters:** This is used for the bus driver, and the driver can be adjusted directly on the system. The pulse driver is not suitable (the MW2200A is a driver equipped with pulse).
- **Advanced parameters:** Advanced parameters: all parameters inside the system, if not required, it's unnecessary to use. All parameters of the system are divided into six categories, namely hardware parameters, system, axis, path, man-machine interface and macro parameters.