

Optics Focus Instruments Co., Ltd.

[MOTION CONTROLLER MANUAL]

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1. Function of front panel



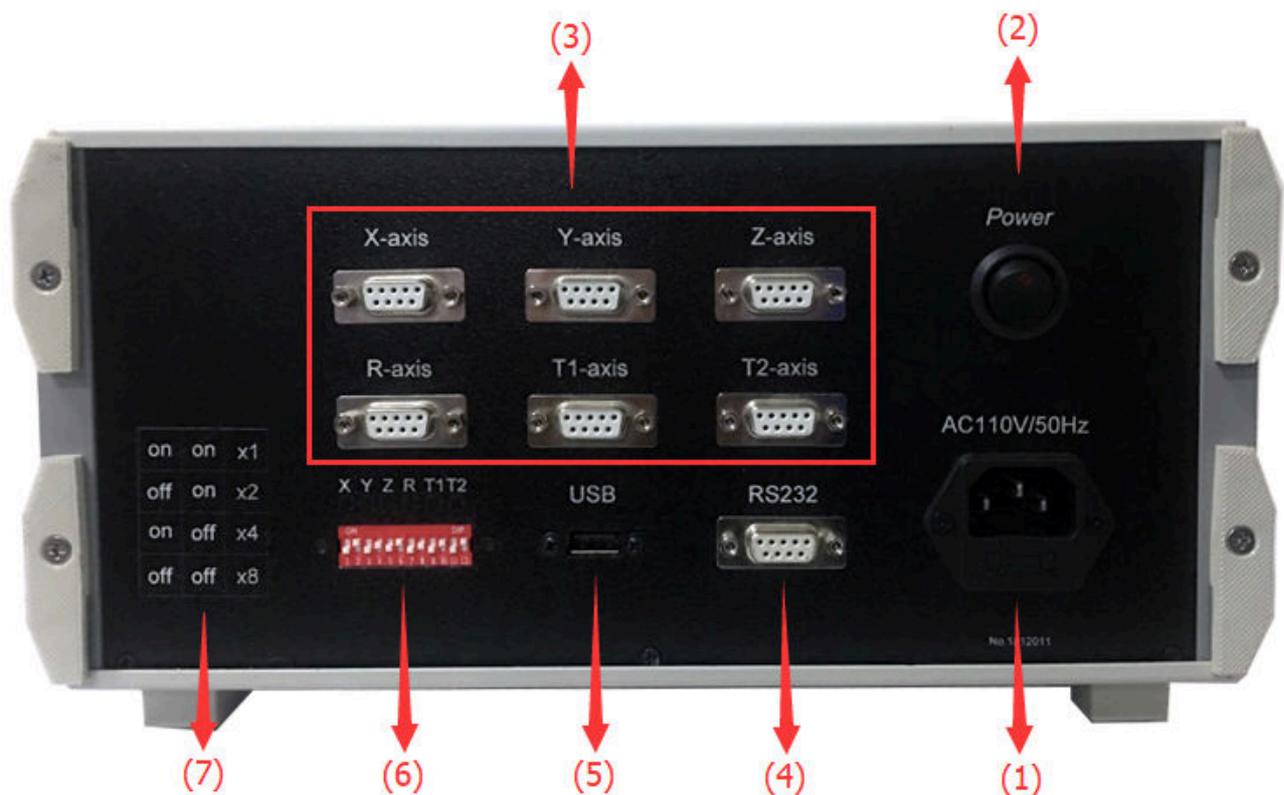
- (1) **LCD** It displays the following information in turn from top to bottom: current position value for X, Y, Z, R, T1 and T2 axis, speed value, displacement value, direction and corresponding status.
- (2) **Ctrl key (mode switch)** It's the switch of manual operation or computer control.
- (3) **Axis(select axis key)** It's enabled only when the mode is manual operation. Press the key, screen will display '*', and you can select any axis of X, Y, Z, R, T1 and T2 in turn .
- (4) **Run key** It's enabled only when the mode is manual operation. It controls the stage to start running. The stage will move the displacement value you set when you press it each time.
- (5) **Home key (return to zero)** It's enabled only when the mode is manual operation. It controls the stage to return to mechanical zero or return to the previously position after it returns to mechanical zero firstly.
- (6) **Set key** It's enabled only when the mode is manual operation. Press the key, you can enter the setting status. The corresponding position in the screen will flash, at this time, you can press '←', '→', '↑', '↓' key to adjust the parameters of each axis.
- (7) **←(move toward left key)** It's enabled only when the mode is manual operation. Under the setting status, press the key, cursor will move toward left.
- (8) **↑(up key)** It's enabled only when the mode is manual operation. Under the setting status, press the key, value

of the flash digit will increase 1.

(9)  (**down key**) It's enabled only when the mode is manual operation. Under the setting status, press the key, value of the flash digit will decrease 1.

(10)  (**move toward right key**) It's enabled only when the mode is manual operation. Under the setting status, press the key, cursor will move toward right.

2. Function of back panel



6-axis Motion Controller

- (1) Power socket
- (2) Power switch
- (3) Connection port for each axis
- (4) RS232 port
- (5) USB interface
- (6) DIP switches of subdivision setting, please refer to the left table. Each axis has **two DIP switches** to decide the subdivision of itself. Up position is on, down position is off. **Please read section 4 to get the detailed setting methods.**

Note: This setting is very important. When you control the positioning stages by software, you must enter the exact same subdivision value in the parameters settings. Otherwise the positioning stages can't move correctly.

(7) Table of subdivision setting

3. Change the current

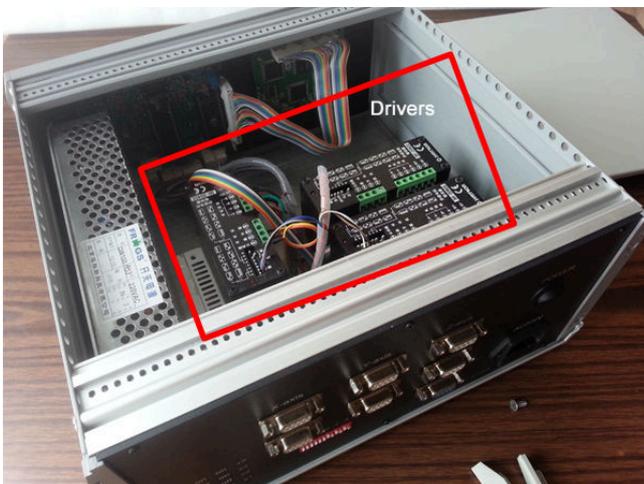
If you bought MOC-01 series controller, please ignore this section. If you bought MOC-02 series controller to connect the motorized positioning stages with NEMA17 stepper motors, please change the currents for NEMA17 stepper motors according to the below methods.

(1) Open the top cover of motion controller.



(2) Find the driver of corresponding axis.

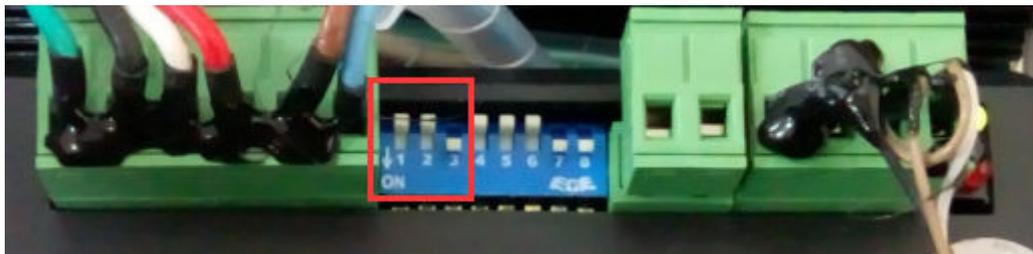
According to the cable connected to the axis on rear panel, you will find the corresponding driver.



(3) Change the status of current switches to set up current for corresponding motorized stage.

You will find the current switches 1, 2 and 3 on the driver. Please just change the positions of switch 1, 2 and 3 to OFF, OFF and ON. It means to change the current for NEMA17 stepper motor to 1.69A. Please don't change the positions of other switches.

Peak Current	RMS Current	SW1	SW2	SW3
1.00 A	0.71 A	ON	ON	ON
1.46 A	1.04 A	OFF	ON	ON
1.91 A	1.36 A	ON	OFF	ON
2.37 A	1.69 A	OFF	OFF	ON
2.84 A	2.03 A	ON	ON	OFF
3.31 A	2.36 A	OFF	ON	OFF
3.76 A	2.69 A	ON	OFF	OFF
4.20 A	3.00 A	OFF	OFF	OFF

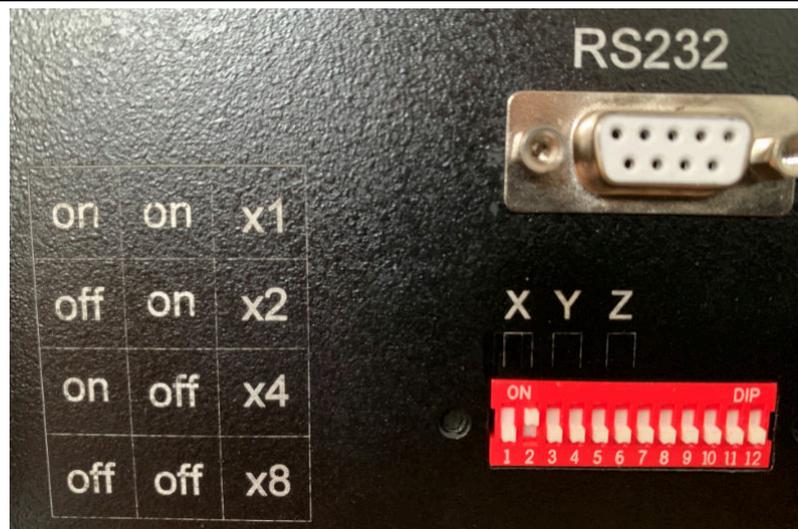


4. Set the subdivision (micro step)

On the back panel of controller box, there's a table to show the relationship between switch status and subdivision.

And next to the table, there're DIP switches of each axis.

This is the picture of back panel of 3-axis motion controller.



Each axis has two switches to decide the subdivision of itself. For example, on this picture, the subdivision of X axis is decided by 1 and 2 switches and the subdivision of Y axis is decided by 3 and 4 switches.

On the top left corner of switches, there's an "ON" label. It means that the up position of switch is ON, the down position of switch is OFF. So we can know the status of switches for X axis is OFF and ON, and Y axis is OFF and OFF as well.

Please refer to the left table, when the status of switches is OFF and ON, the subdivision is 2. So the subdivision for X axis is 2 and for Y axis is 8.

If you want to change the subdivision, please change the status of switches according to the table.

Note: After you changed the subdivision, you need to update the subdivision setting in the software.

5. Connection method

5.1 Using our motion controller:

Turn off the controller before connecting.

Connect the stages to the motion controller by the black cables provided.

Connect the motion controller to computer by USB line or RS232 white line.

Install the driver for USB line. The driver can be downloaded from our website.

Note: Please don't connect the motorized positioning stages to the motion controller before the motion controller is powered on.

5.2 If you want to control our motorized positioning stages via the motion controller of other company, you need the following information:

- (1) The drivers must be compatible with our stepper motors. Please refer to section 9.
- (2) You need to make the cables with DB-9 connector according to the below table or contact us to get the wiring diagram.
- (3) If you need to change the direction, please exchange the positive end and negative end of the phase (for example, A-→A+,B-→B+).

Meaning of the DB9 pins:

Pin	Meaning
1	Null
2	Zero position and the limit switch which is at the opposite end of the motor
3	The limit switch which is at the end of the motor
4	Loop circuit of limit switch
5	Null
6	A+
7	A-
8	B+
9	B-

The current transmission ratio of photo-electric switch is 20%, please set aside enough margin when you design the power and circuit.

6. Manual operation mode

The initial state of the motion controller is computer control mode. 'C' will be displayed on the top left corner of the LCD and flash. Press **Ctrl** key, the mode will be changed to manual operation.

6.1 Parameters setting

When it's the manual operation mode, you can set parameters of motion controller as follows.

LCD displays the following information:

* XPos= [000000]

YPos=[000000]

ZPos=[000000]

RPos=[000000]

T1Pos=[000000]

T2Pos=[000000]

Speed <255>

Step <+001000>

Axis: Press the key, '*' will appear and flash. You can select the X, Y, Z, R, T1, T2 axis in turn by pressing the key. Then you can set parameters for the corresponding axis or control the motion.

Ctrl: Press the key, 'C' will be displayed on the top left corner of the LCD and flash. In this case, the mode changes to computer control, all keys of the panel are disabled. When you press it again, the mode changes to manual operation and 'C' disappeared.

Home: Press the key, 'H' will be displayed on the top left corner of the LCD and flash. There are two options under 'H', 0 and 1.

(1) Press \uparrow to select '0' and '0' will flash. The function is to control the stage return to the mechanical zero position.

(2) Press \downarrow to select '1' and '1' will flash. The function is to control the stage return to mechanical zero position firstly, then the stage will return to previous position.

Run: Press the key, '*' will flash. The stage will move the displacement you set when you press it each time.

Set: Press the key, the speed value will flash. You can use \uparrow , \downarrow key to adjust the value, but the maximum speed value is 255. You can use \leftarrow , \rightarrow key to select digit position.

Note: The speed value is better not more than 150.

Formula:

Actual speed(mm/s or degree/s)=(speed value + 1)*22000* pulse equivalent / 720

After you adjust the speed value, press the key again, the direction sign '+' will appear and flash. You can use \uparrow , \downarrow key to change the direction. Press \rightarrow key to set up the displacement value, you can use \uparrow , \downarrow , \leftarrow , \rightarrow to adjust the value.

After you finish the parameters setting, please press **Set** key again. Then you can make another operation.

Note: Under setting mode, Axis, Ctrl, Home and Run keys are disabled.

6.2 Displacement (step) calculation

In manual operation mode, run distance of motion controller is decided by the displacement. Its unit is step. When the motor runs a step, the displacement of stage equals to pulse equivalent, namely resolution.

Integral step value of per rotation of the stepper motor=360/stepper angle

For linear stage:

Pulse equivalent = pitch of the lead screw (mm) / (integral step value of per rotation of the stepper motor * subdivision) =pitch of the lead screw (mm) * stepper angle / (360 * subdivision)

For rotation stage or goniometer stage:

Pulse equivalent = 360 / (integral step value of per rotation of the stepper motor * subdivision * transmission ratio)
= stepper angle / (subdivision * transmission ratio)

Please refer to section 8 to get more formulas.

You can set the subdivision number via the switch on the back panel.

If you set the pulse number of displacement to N, then the actual displacement equals to N * pulse equivalent. The pulse equivalent is resolution, for the linear stage, its unit is mm, for the rotation stage, its unit is degree.

Note:

*The unit of displacement is step. The unit LCD shows is step. If the value LCD displays is 100, then the actual displacement equals to 100 * pulse equivalent.*

6.3 Motion operation

Please operate the motion controller according to the following steps:

1. Press **Home** key to let the stage return to the mechanical zero position.
2. Press **Axis** key to select the axis.
3. Set proper speed value.
4. Set the displacement:
 - (1) If you want to run forward 10mm, you need to set direction '+', then set the displacement and press **Run** key to start. The displacement of linear stage equals to 10(mm)/pulse equivalent.
 - (2) If you want to run backward 40mm, you need to set direction '-', then set the displacement and press **Run** key to start. The displacement of linear stage equals to 40(mm)/pulse equivalent.

If you want to control the rotation stage, please replace the value of displacement by the angle value.

6.4 How to control rotary stage manually

There're two steps to control the motorized rotation stage MOR-200-90 manually by our motion controller. One step is to calculate the pulse value depending on the formulas, and the other one step is to input the pulse value into the motion controller.

(1) You have to understand these formulas:

- a. Pulse equivalent = $360 / (\text{integer step of per rotation of the step motor} * \text{subdivision} * \text{transmission ratio}) = \text{stepper angle} / (\text{subdivision} * \text{transmission ratio})$
- b. Pulse number = $\text{Actual rotation degree} / \text{pulse equivalent}$

If you want to move the rotary stage M degree, then the corresponding pulse number equals to $M / \text{pulse equivalent}$.

(2) You have to get the parameters in the formulas from the specifications table from our website and then calculate the pulse value you need.

- a. Get these two parameters from our website.

Stepper angle=1.8

Transmission ratio=180

You can easily get these two parameters from the specification of our product at:

<http://www.optics-focus.com/motorized-rotary-stage-p-524.html>

- b. Get subdivision from the back panel of controller box.

Subdivision depends on the DIP switches on back panel of the controller. If you need high resolution, please change the subdivision to 8. More information about the subdivision, please refer to section 4.

Let's suppose the subdivision is 8. Then we can calculate the pulse equivalent is $1.8/(8*180)=0.00125$. This value is also the maximum resolution.

- c. Get the pulse value you need to input into controller.

So if you need to make the rotation stage rotating 90 degrees, the corresponding pulse value is 72000.
($90/0.00125$)

Then please input pulse value 72000 into the controller. About the speed, you can try to set up one value less than 255. More operation methods please refer to section 6.

If you need to rotate 180 degrees, the pulse value you need to input is 144000. (180/0.00125)

7. Software operation

Please connect the motion controller to the PC by the USB line or the RS232 white line before turning on the motion controller. Then turn on the controller, 'C' will be displayed on the top left corner of the LCD and flash. That means it is the computer control mode now.

Note:

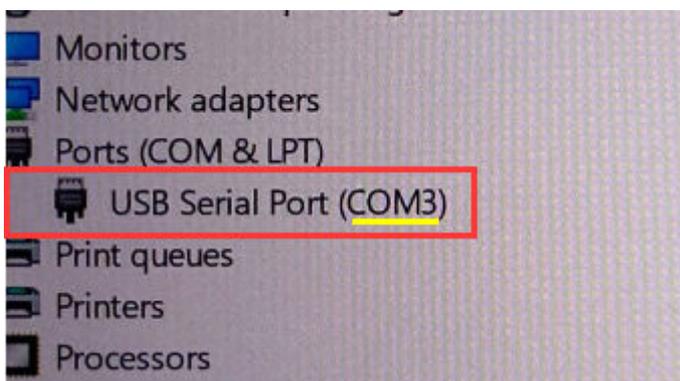
Please make sure the motion controller is powered off before connecting the motion controller to the computer.

If you want to control the stages remotely, please use a long RS232 to USB conversion line. The long USB line may not work well.

If you use the USB line to connect the controller to the PC, the driver of USB should be installed automatically. But if the driver of USB line is not installed successfully, please manually install it in the Device Manager. The unrecognized USB line will be listed in the Device Manager as follow. You may download the USB line driver from our website.



Whatever you use USB line or RS232 line to connect to PC, please get the port number assigned in the Device Manager and then select the correct serial port number in our software to connect to the controller.



You can control the stages via our software. The software can perform complicated and precise control to motorized positioning stages.

Control modes:

Free mode: freely increase or decrease the replacement.

Increment mode: precisely increase or decrease the replacement.

Target mode: fast and precisely move to a position.

You can set parameters in software conveniently according to specifications of the positioning stages.

7.1 Recommended configuration

Operation system: Windows 10(x32 and x64), Windows 7(x32 and x64), Windows XP, Windows 2000

Hardware:

- (1) Port: a serial port and a USB port.
- (2) Memory: more than 128MB
- (3) CPU: more than 500MHz

7.2 Usage

When you use windows 7 or windows 10, please right click the installation file/software and run it as administrator.

Please install this software to your computer according to the installation wizard.

(1) Main interface (Manual Operation):

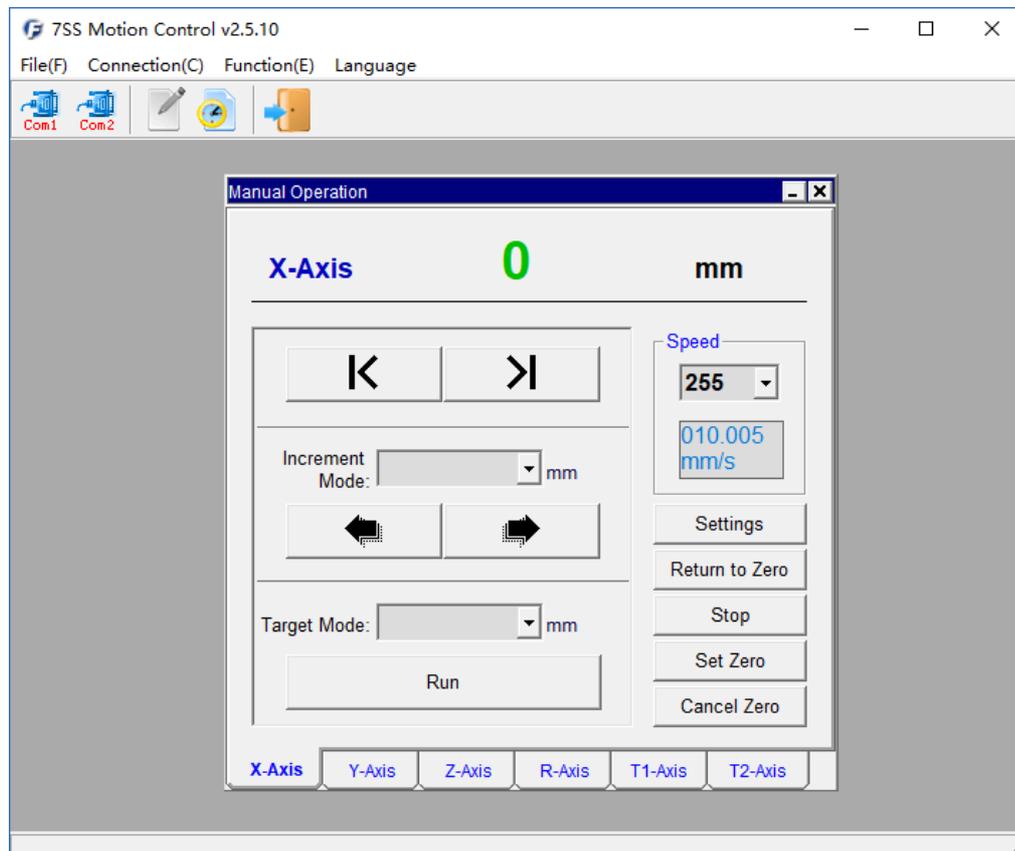


Figure 1

The main menu includes 'File', 'Connection', and 'Function', and the toolbar contains the corresponding shortcut buttons.

You can select 'Exit' in 'File' menu or click the last shortcut button to exit.

(2) Select correct serial port in 'Connection' menu or click corresponding shortcut button.

(3) Click the third shortcut button, the interface is as follow:

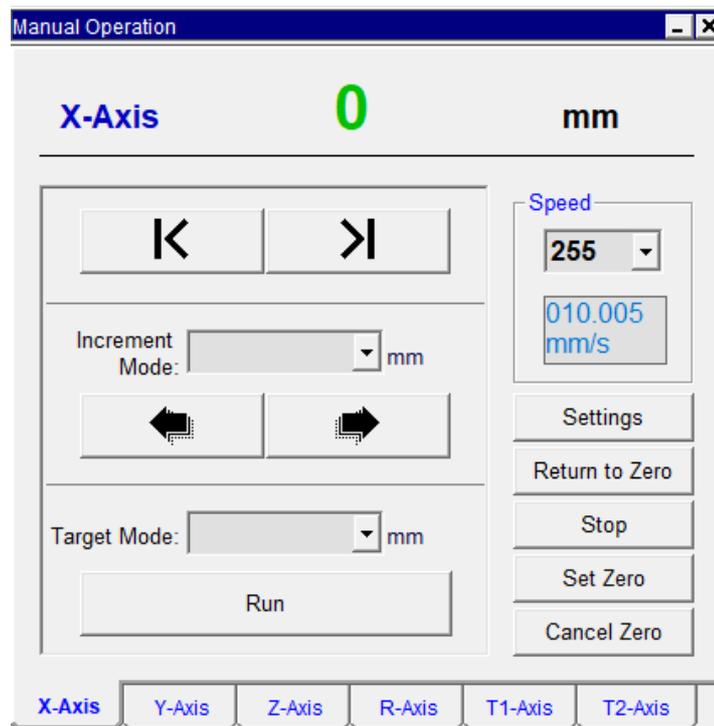
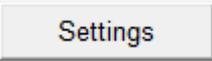
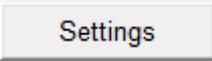


Figure 2

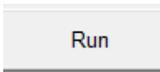
■ : Click the  button to set the parameters for each axis. **Please set the parameters for the positioning stages before you start to use.** Please read the next section to know more details.

Note: The tab for the axis which is not set the parameters will be unable. Please set the parameters for each axis on the setting window.

■ Select axis by clicking the tab at the bottom.

■ Free mode: When you press the  or  button, the translation stage will move toward corresponding direction, and when you stop pressing the button, the translation stage will stop.

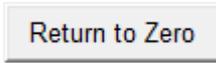
■ Increment mode: After inputting or selecting a value, you can click  or  button, then the translation stage will move backward or forward.

■ Target mode: After inputting or selecting a value, you can click  button, then the translation stage

will move correspondingly.

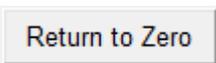
- Speed Selection: 0-255. The speed under the drop-down menu is the current actual speed value.

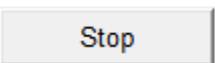
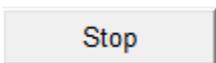
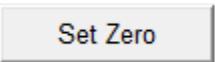
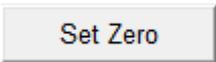
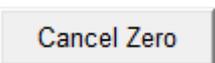
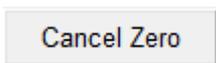
Note: *The speed value is better not more than 150.*

- : Click the  button to move the stage back to mechanical zero position or nominal zero position.

Note:

Some of the rotation stages don't have the mechanical zero. So for the rotation stages without mechanical zero, return to zero operation is just to clear the step value in the controller. If you make the return to zero operation for the rotation stages without mechanical zero, the rotation stages will need a long time to stop.

When click the  button for goniometer stage and then click 'N', the goniometer stage will move to the mechanical zero position firstly, and then will move to the zero position you set.

- : Click  button to forcibly terminate motion.
- : Click  button to set the current position as zero position. **It's only available for goniometer stage.** After setting zero position for goniometer stage, you need to reset the positive travel range and negative travel range of goniometer stage on the popup window.
- : Click  button to cancel the zero position. **It's only available for goniometer stage.** After canceling zero position for goniometer stage, it needs to reset the positive travel range and negative travel range of goniometer stage.

(4) Interface of parameters settings:

Please click each axis tab and set the parameters for corresponding stage before using.

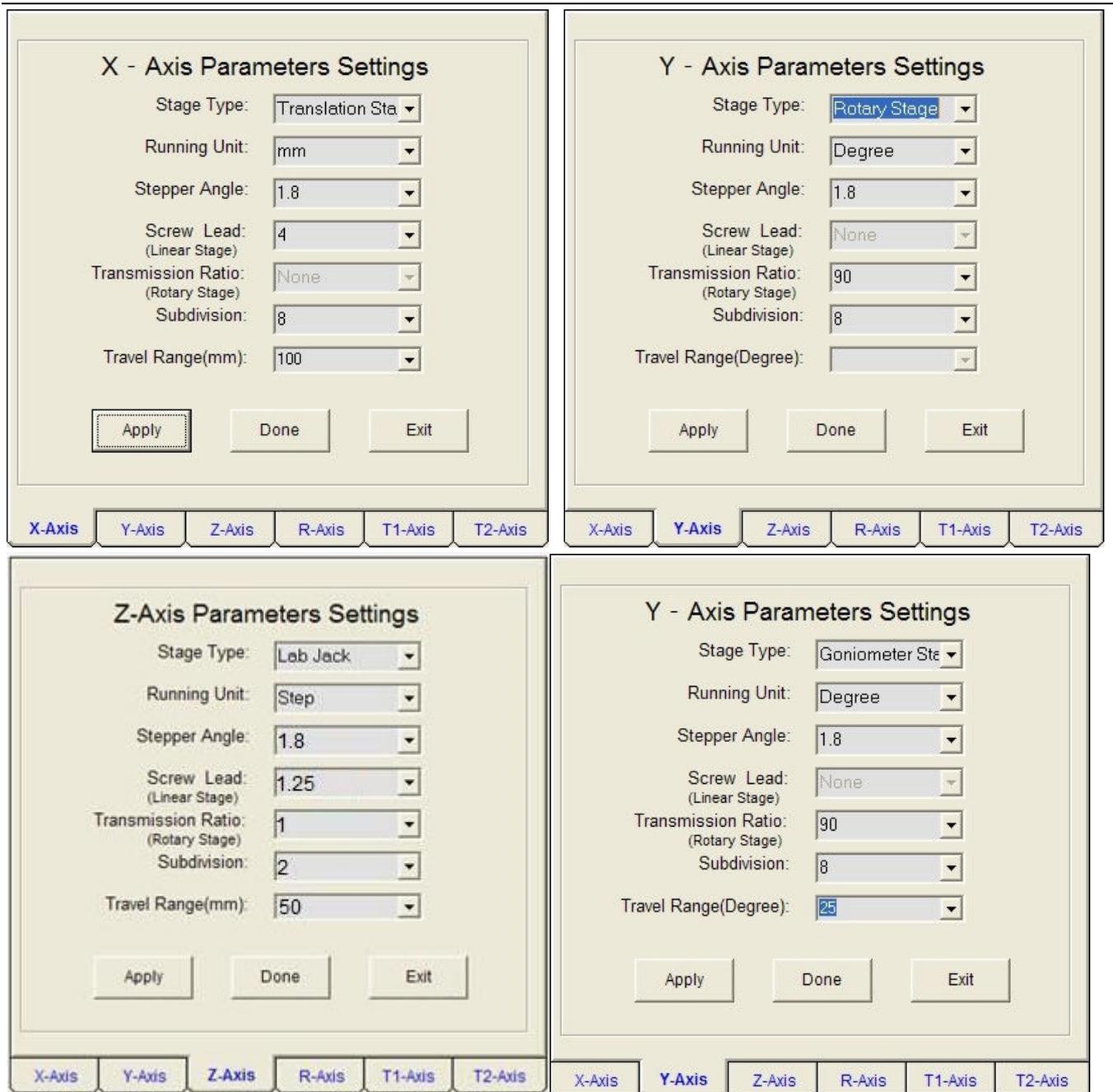


Figure 3

- **Stage Type:** Select the stage type according to the actual situation. There are four types: No connection, Translation Stage, Rotary Stage, Lab Jack and Goniometer Stage.
- **Running Unit:** mm(for translation stage and lab jack (except for MOZ-80-50)), degree(for rotary stage and goniometer stage) or step(for both of them)

Note:

For Lab Jack MOZ-80-50, the running unit must choose 'Step', because there's no linear relationship between pulse and height(mm). Please set all parameters for Lab Jack MOZ-80-50 according to the above picture.

- **Stepper Angle:** 0.9 or 1.8. Please refer to “motor type” in the specifications table of corresponding motorized stage. Please get the specifications table from our website.
- **Screw Lead:** (for linear stage) Please refer to “screw pitch” in the specifications table of corresponding translation stage. Please get the specifications table from our website. **This field can be input value directly.**
- **Transmission Ratio:** (for rotary stage and goniometer stage) Please refer to “transmission ratio” in the specifications table of corresponding rotation stage or goniometer stage. Please get the specifications table from our website. **This field can be input value directly.**
- **Subdivision:** Please get the subdivision from the table on back panel of controller box, and then select exact same value. Please refer to section 4 to get more detailed information.
Note: This parameter is very important. Please read section 4 to learn how to set it correctly.
- **Travel Range:** Please select the travel range of translation stage, rotation stage or goniometer stage. Please refer to “travel range” in the specifications table of corresponding stage. Please get the specifications table from our website. **This field can be input value directly.**
- **Apply Button:** Save the parameters.
- **Done Button:** Save the parameters and return to the main interface.
- **Exit Button:** Don't save the parameters and return to the main interface.

Method for setting parameters for multi-axis stages:

After finishing setting for X axis, please click **Apply** button, then click the bottom tab to choose Y axis, and after finishing setting for Y axis, please click **Apply** button, then click the bottom tab to choose Z axis, and after finishing setting for Z axis, please click **Done** button to return to the main interface.

Note:

When you run the software for the first time, the interface of parameters setting will open automatically for you to set the parameters for all axes. The axes which you haven't set the parameters for will be disabled.

Note:

When you set the zero position for goniometer stage, you have to reset the positive travel range and negative travel range of goniometer stage according to the zero position. The side of near motor is positive, the other side is negative. The interface will be as follows:

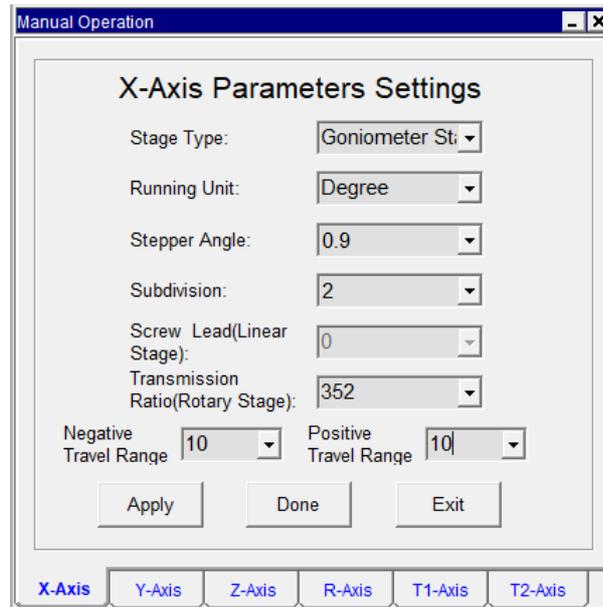


Figure 4

(5) How to set the parameters

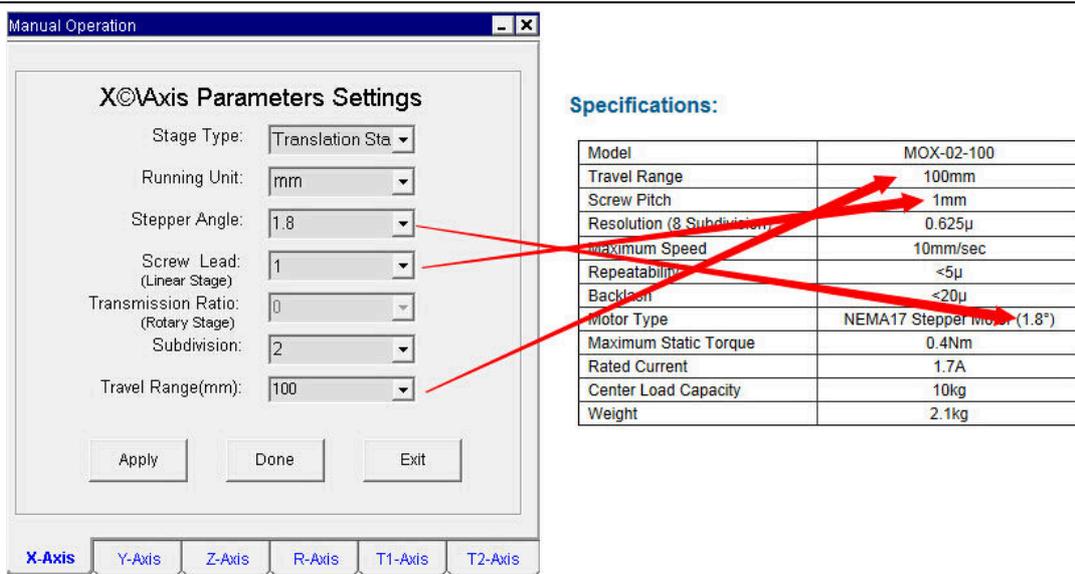
When you use the software of motion controller to operate the motorized translation stages, you need to set the parameters in the software firstly. You can get the most of parameters from the specifications table and the specifications table is shown on our website.

For example, we will explain how to set the parameters of motorized translation stage MOX-02-100 in software.

(a) Please get the specifications table of MOX-02-100 from our website at:

<http://www.optics-focus.com/motorized-linear-stage-p-573.html>

(b) You can get the following parameters from the specifications table:



X-C Axis Parameters Settings

Stage Type: Translation Sta

Running Unit: mm

Stepper Angle: 1.8

Screw Lead: (Linear Stage) 1

Transmission Ratio: (Rotary Stage) 0

Subdivision: 2

Travel Range(mm): 100

Apply Done Exit

X-Axis Y-Axis Z-Axis R-Axis T1-Axis T2-Axis

Specifications:

Model	MOX-02-100
Travel Range	100mm
Screw Pitch	1mm
Resolution (8 Subdivisions)	0.625μ
Maximum Speed	10mm/sec
Repeatability	<5μ
Backlash	<20μ
Motor Type	NEMA17 Stepper Motor (1.8°)
Maximum Static Torque	0.4Nm
Rated Current	1.7A
Center Load Capacity	10kg
Weight	2.1kg

You can get Stepper Angle from **[Motor Type]** in Specifications table.

You can get Screw Lead from **[Screw Pitch]** in Specifications table.

You can get Travel Range from **[Travel Range]** in Specifications table.

(c) Subdivision setting is on the back panel of motion controller. Please refer to section 4.

(6) How to set the zero position for goniometer MOG-65-15

If you want to set the '0' scale on the goniometer as the zero position, please follow these steps:

- a. Run the software, firstly set the parameters of goniometer by clicking [Settings] button.
- b. Click [Return to Zero] button and then click 'N', the goniometer will move to the mechanical zero position.
- c. Input the '20' in the Increment Mode and click [Increase] button to move the goniometer to '0' scale.
- d. Click [Set Zero] button and then click 'Y' to set the current position as the zero position.
- e. Select '15' as the negative travel range and the positive travel range on the popup window and then click [Apply] button and [Done] button.
- f. Click [Return to Zero] button and then click 'N', the goniometer will move to the mechanical zero position firstly and then move to the zero position you set.

If you want to set other degree as the zero position, please refer to the above steps.

(7) Auto run program

Select 'Auto Run' in 'Function' menu, the interface is as follow:

You can easily make a new program or edit an existing program to control the complex movement of stages.

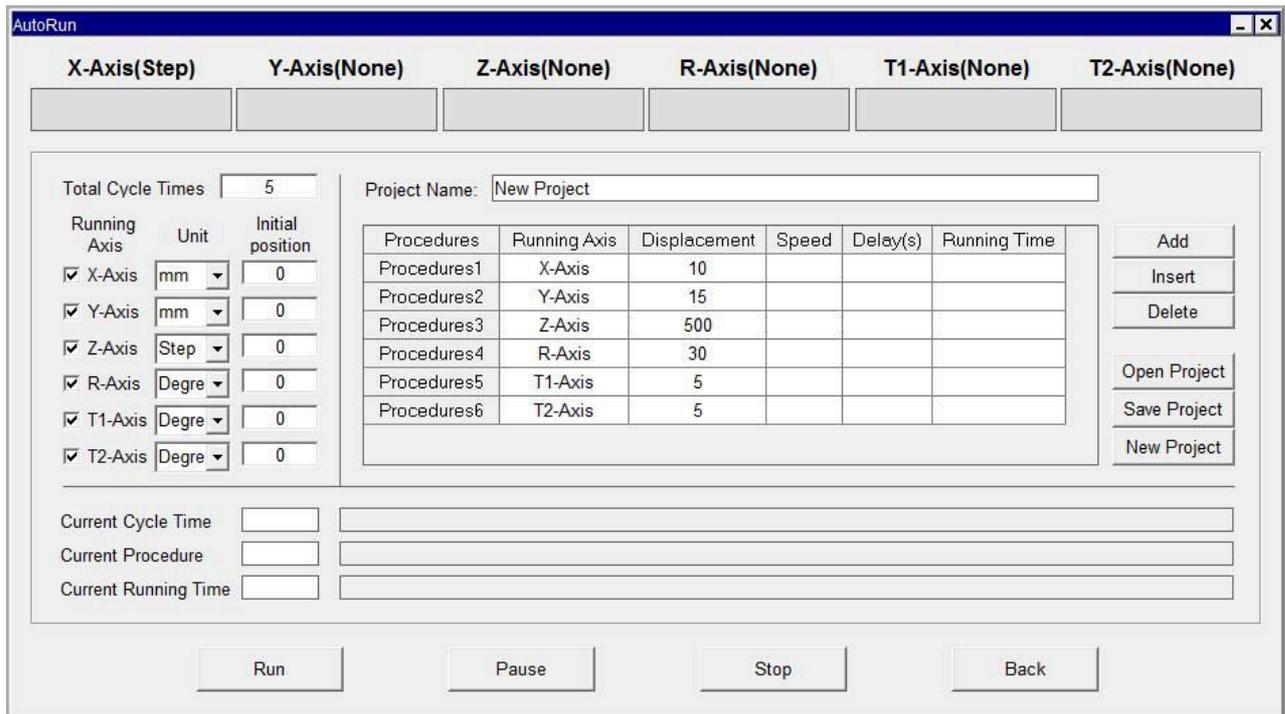
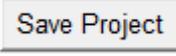
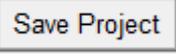
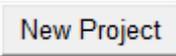
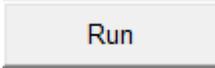


Figure 5

- **Total Cycle Times:** One cycle means all procedures run once. Total Cycle Times mean times of one cycle running.
- **Running Axis:** Select the axis which needs to run. For example, you can select x, y, z axis to perform moving.
- **Unit:** Select the running unit (mm, degree, step) from the drop-down list according to the stage type.
- **Initial Position:** The stage will move to the initial position before running of project.
- **Project Name:** Input the name of new project.
- **Running Axis:** Select the axis which needs to run in the current procedure.
- **Displacement:** Input the displacement of corresponding axis. If you input negative value, the stage will move to negative direction.
- **Speed:** Input the running speed of corresponding axis.
- **Delay:** Input the interval value between current procedure and next procedure. The unit is second.
- **Running Time:** It's the running time of current procedure. After the current procedure finishes the running time, the next procedure will start to run.
- : Click  to add a new procedure.
- : Click  to insert a new procedure before the current procedure.
- : Click  to delete the current procedure.

- : Open an existing program. It's very useful to avoid repeated operation. You can also edit the program and save it to a new project.
- : Click  to save the current project.
- : Add a new project.
- : When you open a project or add a new project, you can click , the stages will move according to the procedures in the project.

At the top of the interface, it will display the position of each axis. At the bottom of the interface, there're three progress bars to display the progress of the program.

8. Formulas

8.1 Definition:

- Step value: The steps stepper motor runs when the stepper motor rotates one circle.
- Stepper angle: The angles stepper motor rotates by single pulse caused.
- Pulse equivalent: The displacement (mm) of translation stage or rotation degree (degree) of rotary stage by single pulse caused, namely control resolution.
- Subdivision: Default subdivision is 2, please refer to the table on the rear panel of controller.
- Pulse number: The corresponding pulse of the displacement translation stage moves or the degree rotary stage rotates.
- Speed value range: 0-255. It depends on the value you set up.
- The relationship between the speed value and pulse period: $30 / (\text{speed value} + 1)$. When the speed value is 255, the driver will send 0.1171875 pulse /ms.

8.2 Formulas:

Integral step value of per rotation of the stepper motor = $360 / \text{stepper angle of the stepper motor}$

Stepper angle of stepper motor is 0.9 degree or 1.8 degree. Please refer to the specifications of specific motorized stage.

(1) For translation stage:

- Pulse equivalent = $\text{pitch of the lead screw (mm)} / (\text{integer step value of per rotation of the step motor} *)$

subdivision) = pitch of the lead screw (mm) * stepper angle / (360 * subdivision)

- Actual displacement (mm) = pulse number * pulse equivalent

If you set the pulse number of displacement to N, then the actual displacement equals to N * pulse equivalent.

- Pulse number = Actual displacement (mm) / pulse equivalent

If you want to move the translation stage M mm, then the corresponding pulse number equals to M / pulse equivalent.

- Actual speed(mm/s)=(speed value + 1) * 22000 * pulse equivalent / 720

The speed value is the value you set up. Range of speed is 0-255.

(2) For rotation stage or goniometer stage:

- Pulse equivalent = 360 / (integer step of per rotation of the step motor * subdivision * transmission ratio) = stepper angle / (subdivision * transmission ratio)

- Actual rotation degree (degree) = pulse number * pulse equivalent

If you set the pulse number of rotation degree to N, then the actual rotation degree equals to N * pulse equivalent.

- Pulse number = Actual rotation degree (degree) / pulse equivalent

If you want to move the rotary stage M degree, then the corresponding pulse number equals to M / pulse equivalent.

- Actual speed(degree/s)=(speed value + 1) * 22000 * pulse equivalent / 720

The speed value is the value you set up. Range of speed is 0-255.

9. Parameters of motor

Model: 42BYGHM607B

Phase: 2

Stepping angle: 0.9°

Current: 1.7A

Torsion: 3.2 Kg.cm

Profile: Both ends of the stages have extended shafts. The front end shaft is 24mm, the other end shaft is 10mm.

Model: 42BYGH613-01B

Phase: 2

Stepping angle: 1.8°

Current: 1.7A

Torsion: 3.5 Kg.cm

Profile: Both ends of the stages have extended shafts. The front end shaft is 24mm, the other end shaft is 10mm.

Model: 57BYGH435-07B

Phase: 2

Stepping angle: 1.8°

Current: 2.8A

Torsion: 12.6Kg.cm

Profile: Both ends of the stages have extended shafts. The front end shaft is 24mm, the other end shaft is 10mm.

The diameter is $\varnothing 6-0.02$.

10. Attentions and FAQ

10.1 Attentions

- Long-term overload

Please avoid to use the translation stages and rotary stages in the status of long-term overload.

- Temperature factor

Please use the controller and stages at normal temperature, otherwise the material will be distorted and life will be shortened and the accuracy will be dropped. If you have special request, please contact us.

- Condition factor

We have taken some measures to prevent dust for important parts of the products. If the condition is bad, please adopt better measures.

- Lubrication

Please add lubricating grease in the translation stages and rotary stages every half year according to the using status.

- Limit switch

The translation stages have two limit switches and a optoelectronic switch. When the running distance exceeds the maximum value, the motion controller will cut off the power to stop running. When the power is off, the motorized

stages can be moved by hand.

10.2 FAQ

Abnormal phenomena	Possible cause	Solution
The stage doesn't move.	<ol style="list-style-type: none"> 1.Power is off. 2.Cable is not be connected well. 3.Cable wiring error. 4.The stage doesn't back to zero. 5.The direction is wrong. 	<ol style="list-style-type: none"> 1.Turn on power. 2.Turn off power and reconnect cable. 3.Cable wiring error correctly. 4.Back to zero position. 5.Select right direction.
The LCD displays nothing, the keys don't work, the stages don't move.	<ol style="list-style-type: none"> 1.Reset is not good when turn on the controller. 2.Connect the cable when power is on. 3.Interference. 	<ol style="list-style-type: none"> 1.Turn on the controller again. 2.Turn off the power, reconnect the cable. 3.Turn on the controller again.
Speed is wrong.	<ol style="list-style-type: none"> 1.Select wrong speed. 2.Select wrong equivalent. 3.There is foreign matter in the guide or screw. 4.Lack of lubricating grease. 5.Overload. 	<ol style="list-style-type: none"> 1.Reset the speed value. 2.Select correct equivalent. 3.Clear the foreign matter. 4.Add lubricating grease. 5.Unload.
Noise.	<ol style="list-style-type: none"> 1.There is foreign matter in the guide or screw. 2.Lack of lubricating grease. 3.The stage is not fixed well. 	<ol style="list-style-type: none"> 1.Clear the foreign matter. 2.Add lubricating grease. 3.Fix the stage well.
The stage can't stop after touching the limit switch.	The limit switch is disabled.	<ol style="list-style-type: none"> 1.Check the wiring of limit switch carefully. 2.Replace the limit switch.
Can't run program.	Parameters are wrong.	Reset the parameters.

If you have any other troubles, please feel free to contact us.