



HIWIN PCI-4P

Motion Maker Operation Manual

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1. Introduction

Motion Maker is a man-machine interface designed by Hiwin for PCI-4P motion control card. With it users can test if PCI-4P works normally and each I/O is connected correctly, and do a simple motion test, so that setting up a motion system becomes more convenient and quicker.

Motion Maker provides mechanism parameter settings, initializing motion library, motion test and multiple point 2D-motion test function. Details regarding how to use, are explained in this manual.

In Motion Maker, blue button means operational, gray button means not operational.

CAUTION

Before using Motion Maker, please read also "PCI-4P MOTION LIBRARY USER'S MANUAL".

2. Mechanism Parameter Settings

Fig.1 is the first screen when execute Motion Maker.

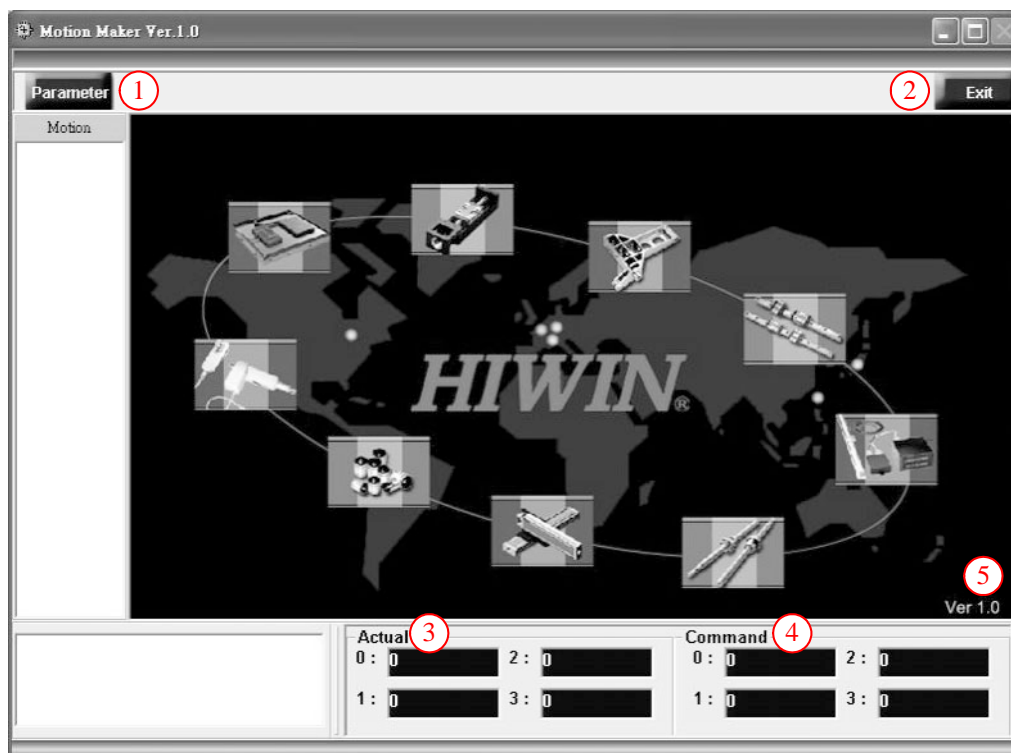


Fig.1 The first screen of execution

Label 1 in the figure: Setting mechanism parameter. Pressing the button, it will become Fig.2.

Label 2 in the figure: Closing Motion Maker.

Label 3 in the figure: Displaying motor current position (feedback value, unit: pulse).

Label 4 in the figure: Displaying PCI-4P current command position (unit: pulse).

Label 5 in the figure: Version number.

When you press "Parameter" button, the screen will become like Fig.2 and Fig.3.

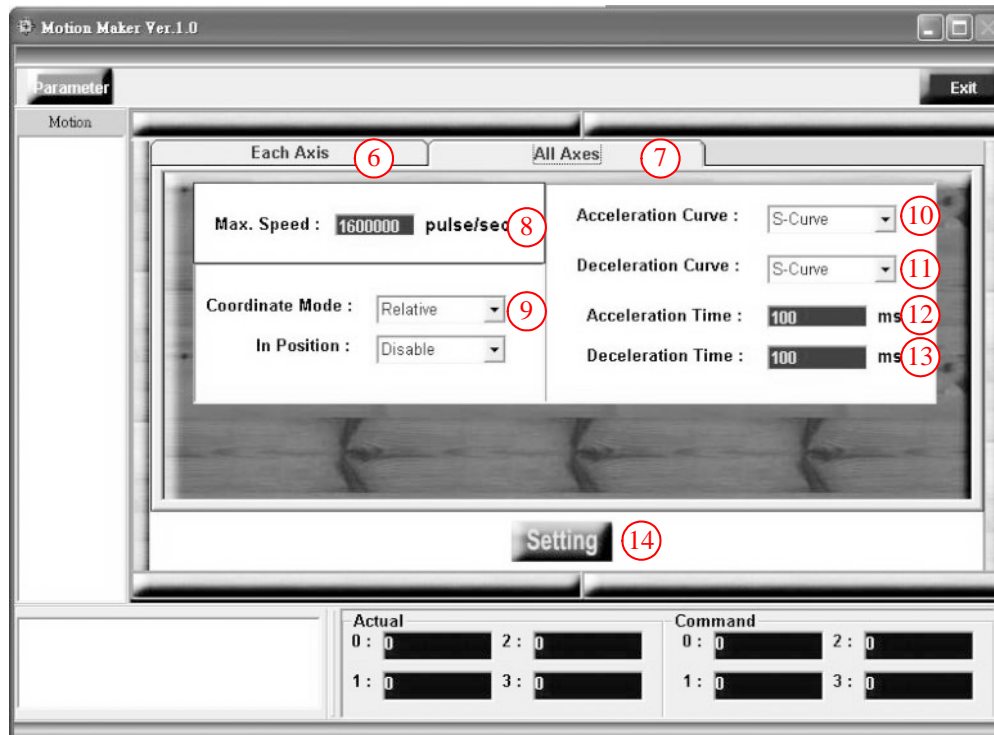


Fig.2 Mechanism parameter setting (all axes)

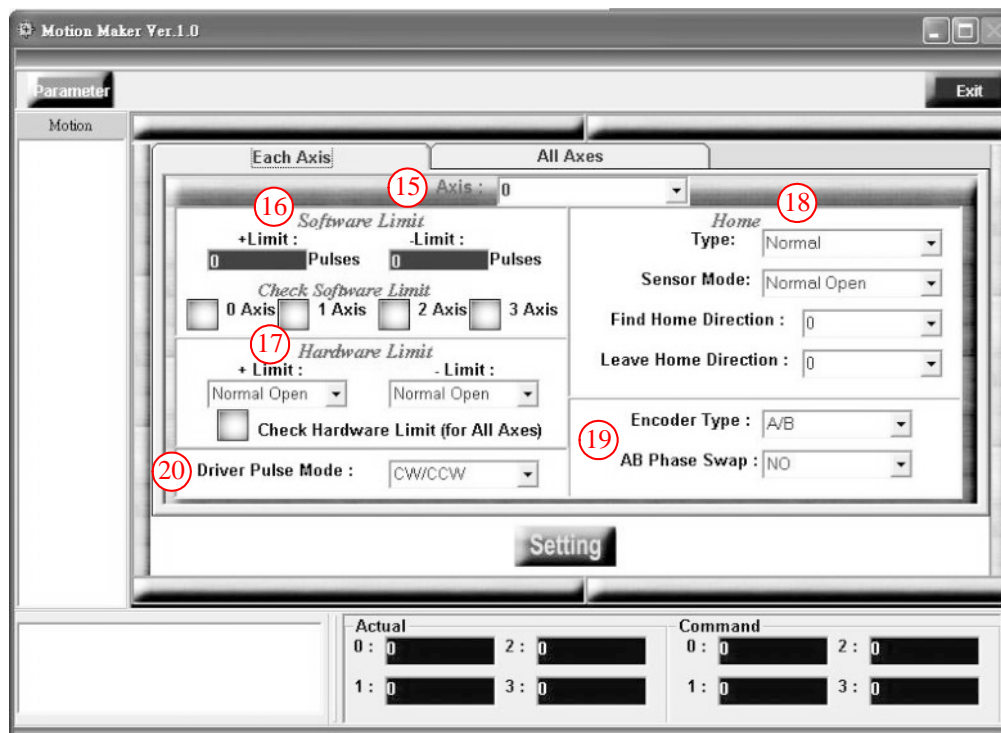


Fig.3 Mechanism parameter setting (each axis)

The followings explain Fig.2 and Fig.3.

Label 6 in the figure: Mechanism parameter setting button for each axis,

pressing the button, the screen will display as Fig.3.

Label 7 in the figure: Mechanism parameter setting button for all axes, pressing the button, the screen will display as Fig.2.

Label 8 in the figure: Setting speed limit of general motion.

Label 9 in the figure: Setting relative or absolute coordinate type (refer to chapter 4 Motion Test).

Label 10 in the figure: Setting acceleration as T-cure or S-curve.

Label 11 in the figure: Setting deceleration as T-cure or S-curve.

Label 12 in the figure: Setting acceleration time for general motion; unit: ms.

Label 13 in the figure: Setting deceleration time for general motion; unit: ms.

Label 14 in the figure: Mechanism parameter setting, press this button to confirm setting.

Label 15 in the figure: Choosing the axis number for setting parameter.

Label 16 in the figure: Software limit setting: There are positive and negative software limit (this setting will influence the range of continuous Jog mode, please refer to section 4.2), and it is possible to choose if enable software limit function.

Label 17 in the figure: Hardware limit setting: There are wiring type (normal open or normal close) for positive and negative limit switch, and it is possible to choose if enable hardware limit function.

Label 18 in the figure: Homing parameter setting: There are homing type, home sensor wiring type, and direction of phase 0 and phase 1. (Please refer to section 2.7 of HIWIN PCI-4P motion library user's manual).

Label 19 in the figure: Encoder parameter setting: There are encoder signal type, and it is possible to choose if swap phase A/B.

Label 20 in the figure: Pulse mode setting: There are Pulse/Direction, CW/CCW and A/B phase pulse modes to be selected.

The parameters under the tab of all axes (Fig.2) apply to all axes; the parameters under the tab of each axis (Fig.3) apply to each axis and can be set independently according to each axis.

When mechanism parameters setting has been finished, please press the button with label 14 to finish.

3. Initialization

When user presses the button with label 14 in Fig.2 and finishes parameter setting, the screen will become a new one displayed as Fig.4. Press “Initialize” button to start motion library.

After successfully starting motion library, screen will become the one as Fig.5 and “Initialize Successful” is displayed in the left lower corner.

If fail to initialize motion library, it displays as Fig.6 and Fig.7, program will be closed automatically after pressing “OK” button, at this time please check if driver of PCI-4P is installed correctly.



Fig.4 Initialization



Fig.5 Initialize successfully



Fig.6 Initialize fail



Fig.7 Initialize fail

4. Motion Test

Pressing the Motion button in the upper area of Fig.5, it will show motion test screen. You can switch between general motion, jog motion and homing motion by using buttons with label A, B and C (shown as Fig.8, Fig.9 and Fig.10). The following three sections explain the three functions separately.

The screenshot displays the Motion Test interface with three main sections. Red circles A, B, and C are placed to the left of the selection buttons for each section.

(A) General Motion (Line)

- Speed : 1000 pulse/sec
- Repeat ☐
- Delay : 0 sec
- Command (pulse)
- 0 : 1000 1 : 1000 2 : 1000

(B) JOG

- Mode :
- Axis :
- Speed : 0 pulse/sec
- Distance : 0 Pulses
- (Direction buttons)

(C) Home

- Speed(pulse/sec)
- 0 : 0 1 : 0 2 : 0 3 : 0
- Order
- 0 : 1 : 2 : 3 :

4.1 General Motion (Linear)

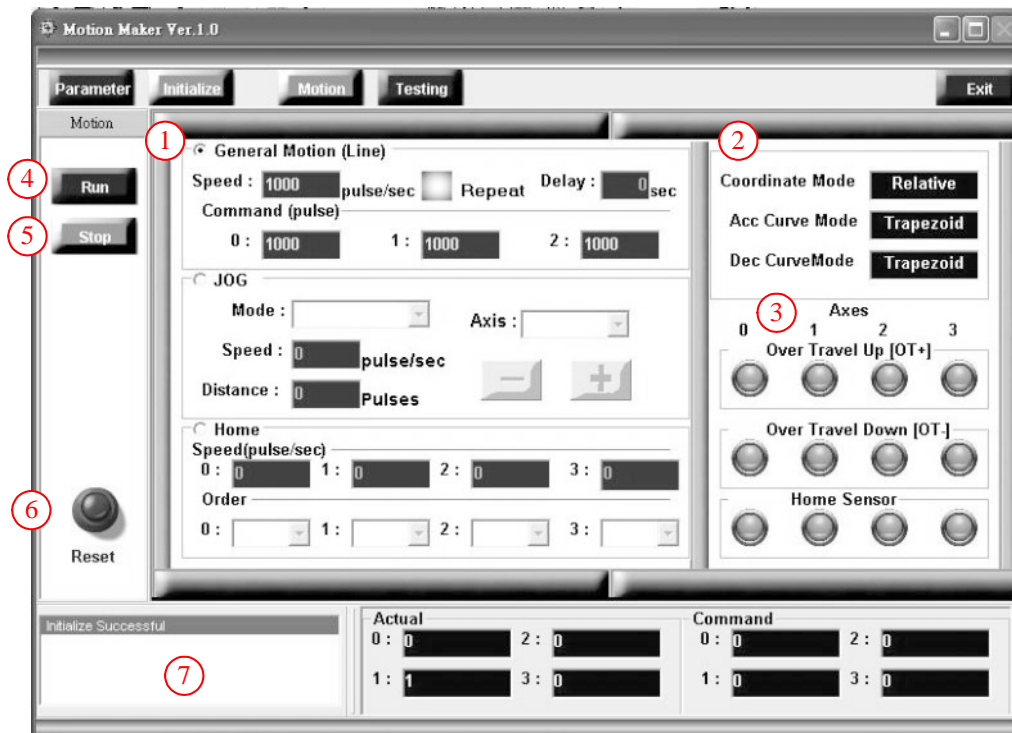


Fig.8 General motion (Linear)

The explanation about Fig.8 is as follows:

Label 1 in the figure: Linear interpolated motion: When “Repeat” checkbox is enabled, it repeats the motion. You can also set delay time between motions. Press ”Run” button to execute the motion. (Acceleration time and deceleration time are set by values with label 12 and 13 in Fig.2)

Label 2 in the figure: Display of coordinate, acceleration and deceleration type. (Fig.2)

Label 3 in the figure: Upper, lower limit and home sensor status; red: ON, green: OFF.

Label 4 in the figure: Executing the edited motion command (except Jog Motion).

Label 5 in the figure: Stopping and aborting motion command.

Label 6 in the figure: Resetting motion library: Clear error status, actual and command position.

Label 7 in the figure: Display executed commands.

4.2 Jog Motion

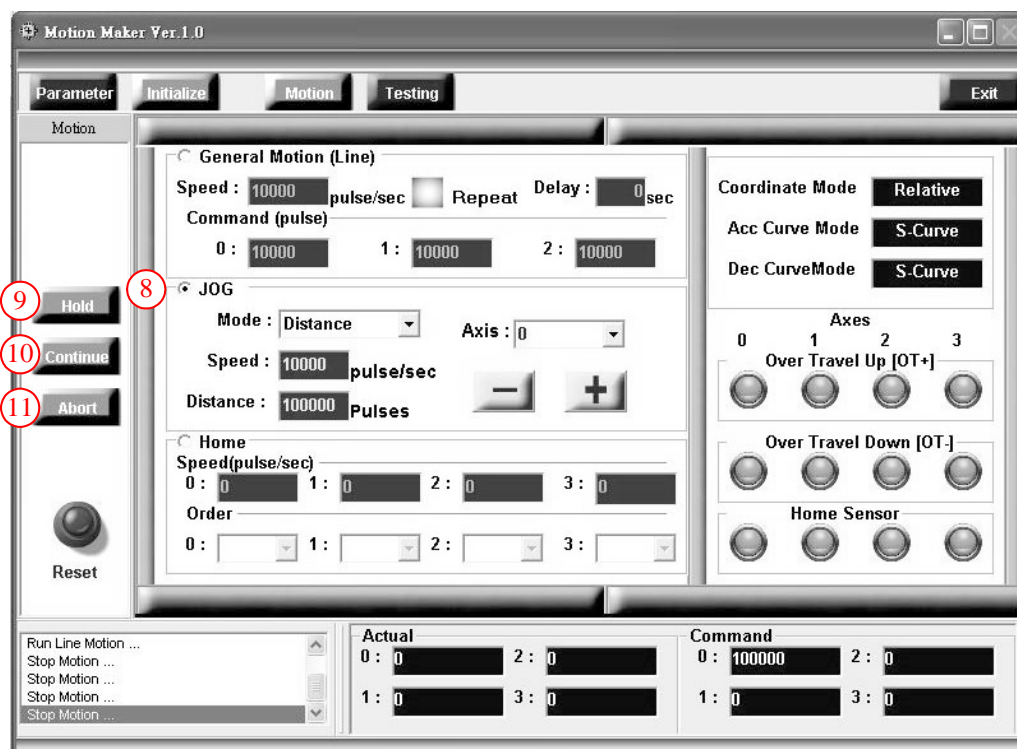


Fig.9 Jog

The explanation about Fig.9 is as follows:

Label 8 in the figure: Jog motion: Here are only short stroke Jog mode and continuous Jog mode to choose. (There are totally 3 kinds of Jog mode, please refer to section 2.6.2 of "HIWIN PCI-4P motion library user's manual"). After inputting speed (positive integer) and distance (positive integer), press "➡" button to move toward positive direction ; press "⬅" button to move toward negative direction. (The acceleration and deceleration time are set by values with label 12 and 13 in Fig.2).

When continuous Jog mode is being executed, pressing "➡" or "⬅" button to make a positive or negative motion (The acceleration and deceleration time are set by values with label 12 and 13 in Fig.2). If you find continuous

Jog motion is not working, please check whether the software limit set by value with label 16 in Fig.3 is reasonable or confirm if motor already

reaches the software limit position.

When Jog motion is being executed, the button with label 9(Hold) in the Fig.9 becomes operational. When you press "Hold" button to pause the Jog motion, then the label 10 and 11 of Fig.9 become operational. At the time you can choose to continue or abort that Jog motion.

Label 9 in the figure: Holding motion: Pause Jog motion.

Label 10 in the figure: Continuing motion: Continue Jog motion.

Label 11 in the figure: Aborting motion: Abort Jog motion.

4.3 Homing

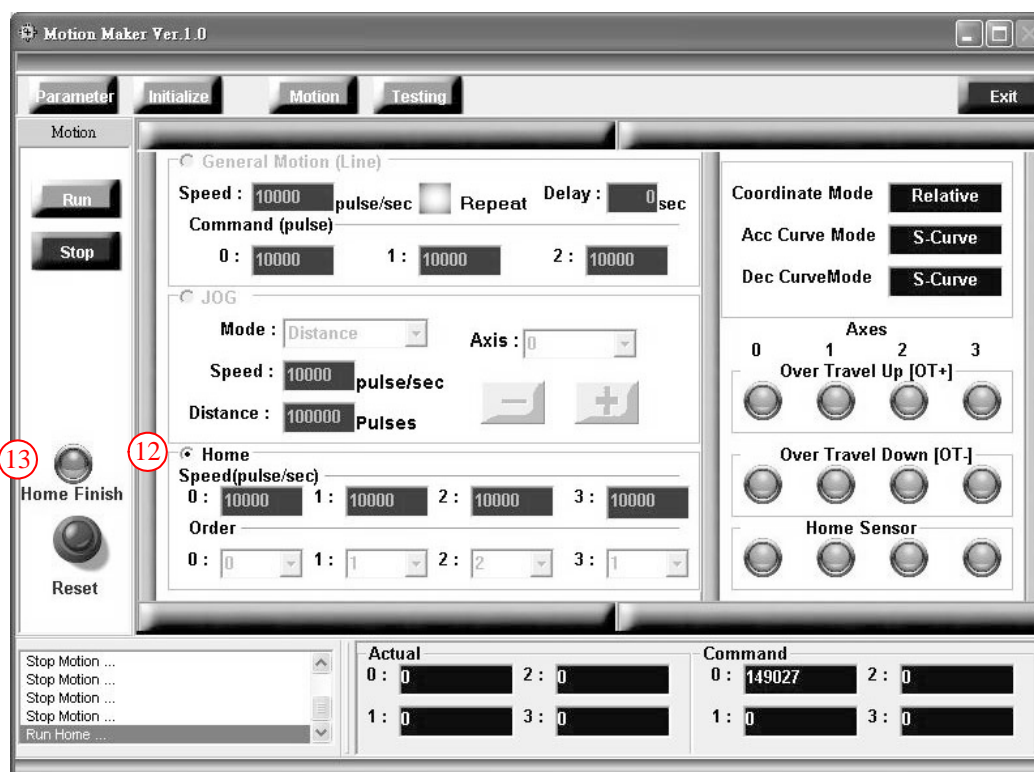


Fig.10 Homing

The explanation about Fig.10 is as follows:

Label 12 in the figure: Homing: There are fields for inputting homing speed and homing sequence for each axis. Press "Run" button to start a homing motion. (Acceleration time and deceleration time are set by values with

label 12 and 13 in Fig.2)

Label 13 in the figure: Displaying homing status: Red means not finished, green means homing motion finished.

5. Multiple point 2D motion test

After successfully initializing motion library, press “Testing” button in the upper area of Fig.5, it will become the screen as Fig.11. It lets user edit general motion commands (linear, arc and circular), and display trajectory in execution.

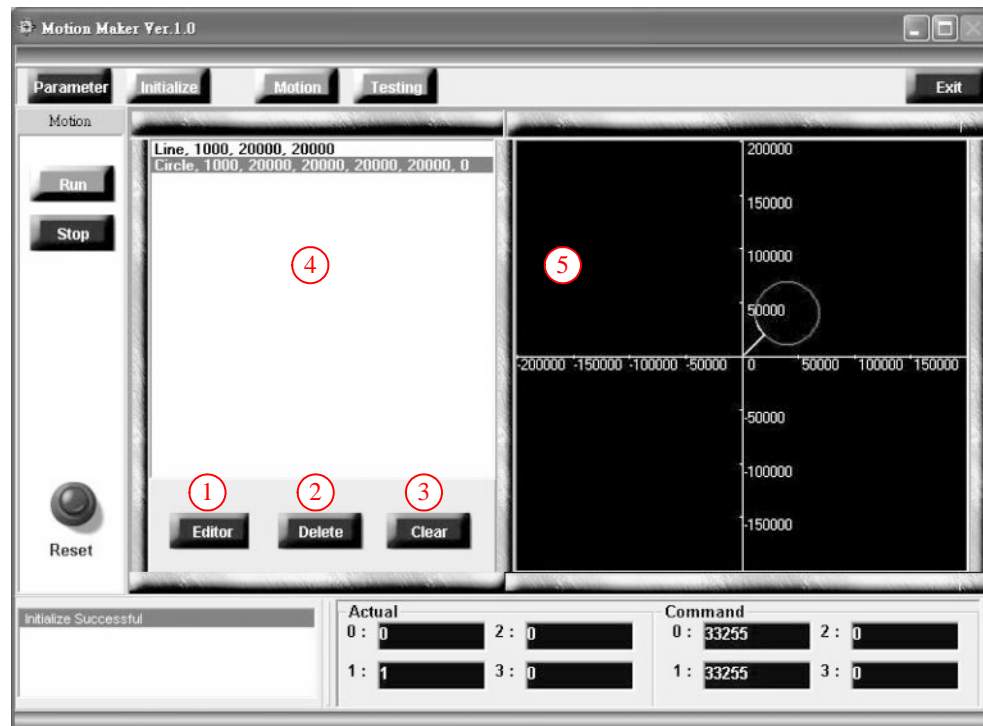


Fig.11 Multiple point 2D motion test screen

The explanation of Fig.11 is as follows:

Label 1 in the figure: Editing motion commands: Pressing this button, an edit screen (as Fig.12) appears.

Label 2 in the figure: Deleting motion command: Press this button to delete a motion command (label 4 of Fig.11), which is shown reversed.

Label 3 in the figure: Clearing motion command: Pressing this button, it will clear all motion commands, also clear display of trajectory screen (label 5 of Fig.11), and reset motion library

Label 4 in the figure: Displaying motion command: When a motion command is executed, it is shown reversed.

Label 5 in the figure: Displaying motion trajectory. Ideal motion trajectory is shown in purple, motion command trajectory is shown in yellow, as Fig.13

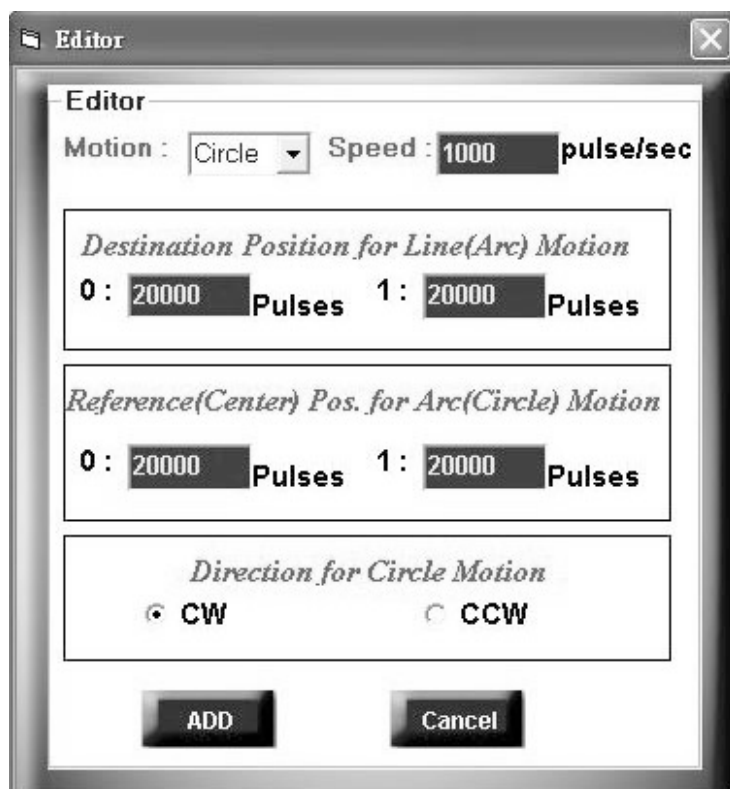


Fig.12 Editor

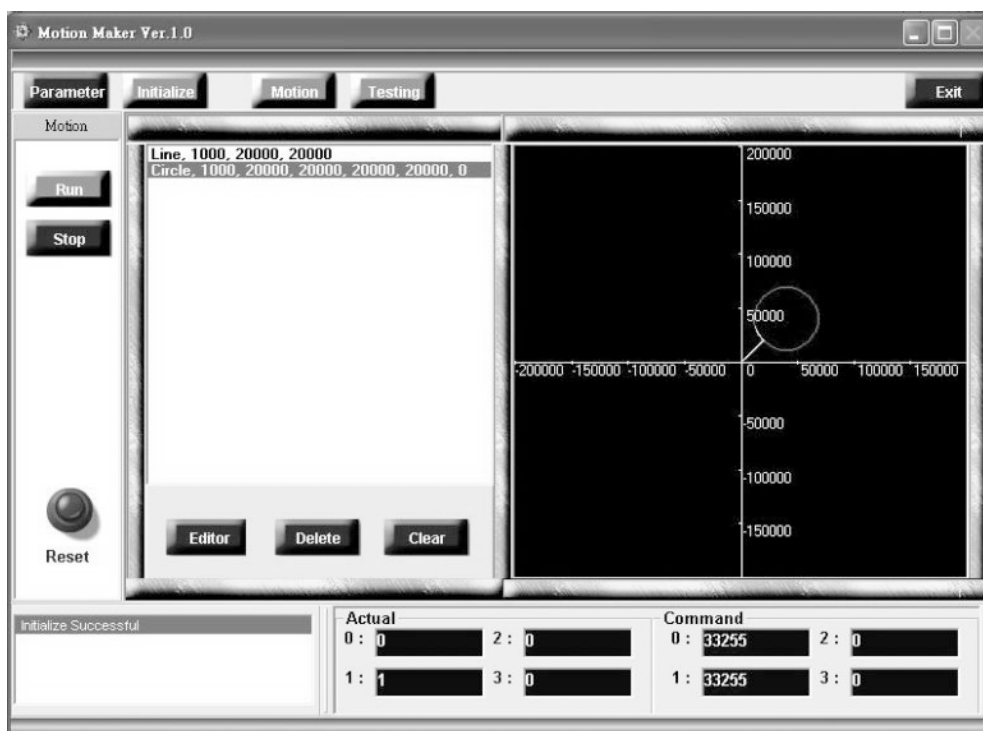


Fig.13 Display motion trajectory