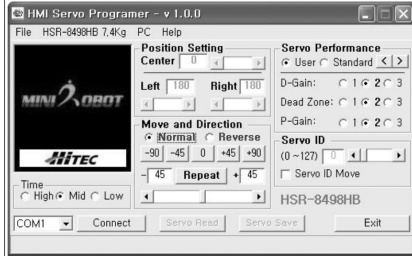


HMI Servo Programmer v1.0 Program

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< Main Screen >

1. What is the HMI Servo Programmer v1.0 Program?

The HMI Servo Programmer v1.0 Program allows a PC and a servo to exchange data using the servo's signal wire. The HMI Protocol can control and set parameters in embedded servos. (Currently, the program is only available for v1.10 servos. These include the HSR-8498HB, HSR-5990TG, HSR-5980SG servo. It will also be available for the new HITEC HMI DIGITAL ROBOT SERVO such as HSR-5498)

2. Program Functions

< Select either PC Mode or MR-C3024 from the main menu >
For PC mode, see also: 3. How to make and connect cables

- ◆ PC mode: Connection between a PC and Servos using the HMI DATA CABLE.
- ◆ MR-C3024 mode: Connection between a PC and Servos using MR-C3024 Board.

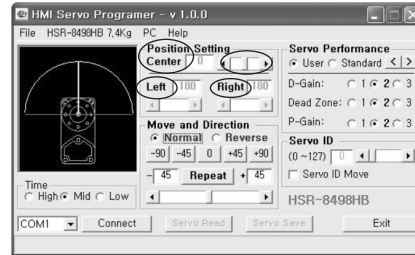


<PC MODE>



<MR-C3024>

A. Position settings



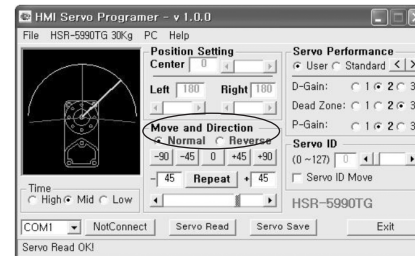
- **Center (PC mode only):** Sets the zero or neutral point of the servo.

Click on 'Center' in the 'Position Setting' box to activate the slider bar. Move the slider left or right to change the zero point.

- **Left, Right (PC mode only):** Defines the end or stop points of the servo. Use to increase or decrease the overall movement range of a servo.

Click 'Left' or 'Right' in the 'Position Setting' box to activate the slider for the designated stop point. Move the slider left or right to change that specific endpoint.

B. Move and Direction



- **Direction (PC or MR-C3024 mode):** A function to setup the direction of the servo movement. There are two types of movements, 'Normal' and 'Reverse.' (Power to the servo must be cycle to test this setting)

- **Move:** Checks the servos movement

There are three ways to test a servos movement. The first is by simply clicking on one of the five buttons (-90, -45, 0, +45, +90).

The second way is by entering a value in the boxes between 0 and +90 and clicking on the repeat button.

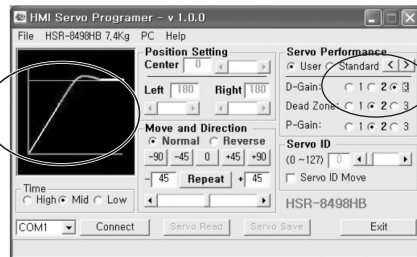
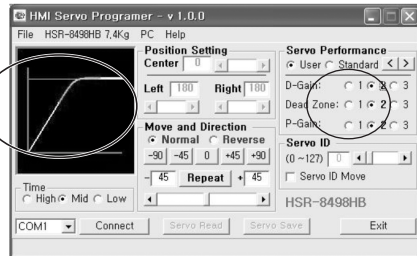
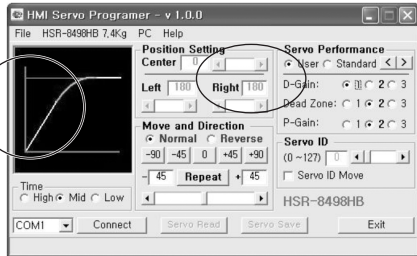
The third is to move the slider under the repeat button back and forth.

C. Servo Performance

- D-Gain Setup (PC or MR-C3024 mode)

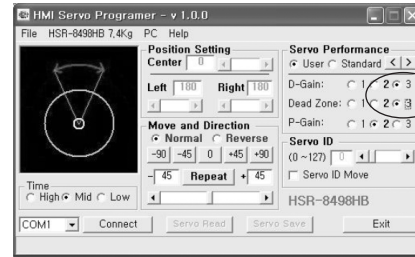
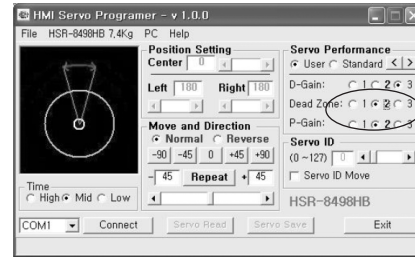
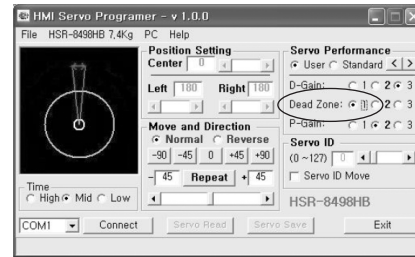
Select stage 1, 2 or 3 in the 'D-Gain' section of the 'Servo Performance' box to choose how smoothly the servo stops.

(Warning: Selecting stage 3 may cause strong jittering or significant wear and tear.)



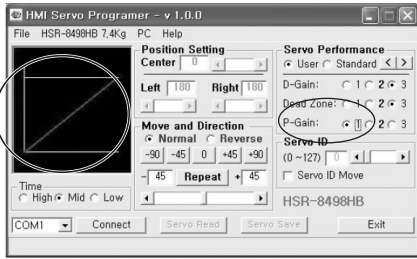
- Dead Zone Setup (PC or MR-C3024 mode)

Select 1, 2 or 3 in the 'Dead Zone' section of the 'Servo Performance' box to choose the inactive range of a stop point. (Warning: Selecting stage 3 may cause strong jittering or significant wear and tear.)



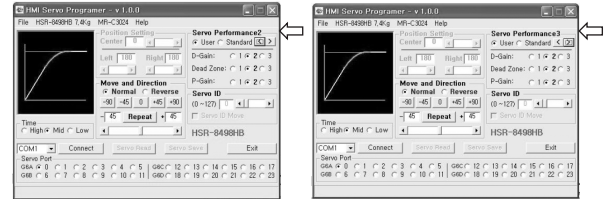
- P-Gain Setup (PC or MR-C3024 mode)

Select 1, 2, or 3 in the 'P-Gain' section of the 'Servo Performance' box, to determine the speed and power of the servo. (Note that if stage 2 or 3 is chosen, the characteristics of the servo may change or cause significant wear and tear.)

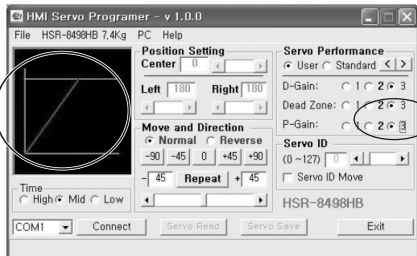
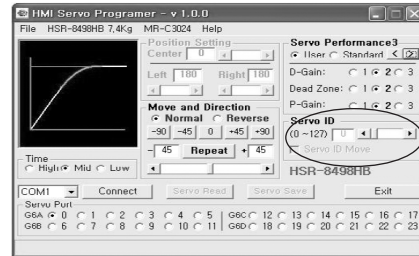
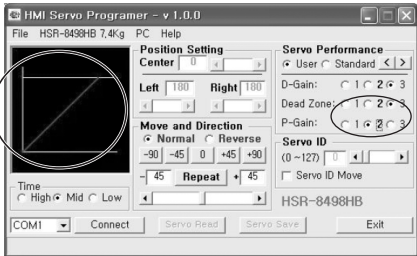


D. Servo Performance2, Servo Performance3

A function that shows the configuration of D-Gain, Dead Zone and P-Gain. The arrow next to 'Standard' allows the user to choose between Servo Performance2 and Servo Performance3



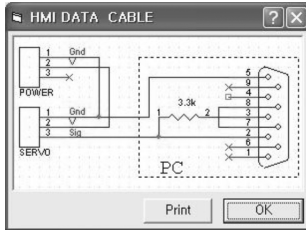
Create an ID (PC or MR-C3024 mode): HMI servos can optionally be controlled via serial communications. For this to work each servo is given an ID which allows the servos to be daisy chained together.



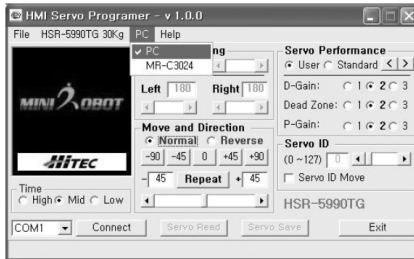
3. How to make and connect cables

The HMI Servo Programmer v1.0 Program consists of two different control modes: PC control mode is when each servo is setup using a connector cable from the computer. MR-C3024 control mode is when the setup is performed through the MR-C3024. From the menu, choose either 'PC' or 'MR-C3024' and the following screens will appear.

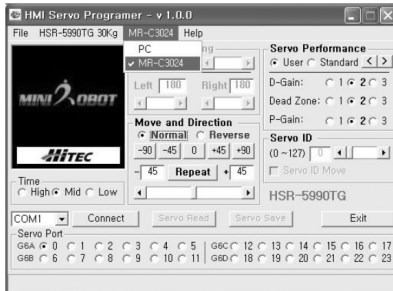
PC mode: Servos are set one at a time. (separate cable necessary)



A computer serial port adapter must be fabricated or the HMI Cable can be purchased separately. The power supply for the servos should be 5 ~ 7.2V DC. (Warning: An incorrect power supply connection may damage the servo)



MR-C3024 Mode: Setting up multiple servos is possible with the MR-C3024. Select the connected servo port at the bottom of the screen. (Warning: If a servo isn't connected, communication will be terminated)



4. Types of controllable servos

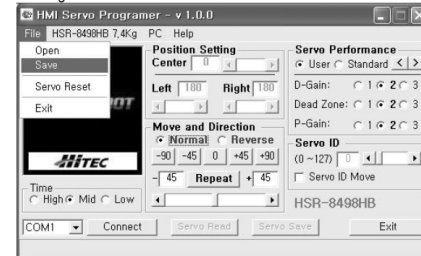
- HSR-8498HB
- HSR-5990TG
- HSR-5980SG
- HSR-5498SG
- HITEC의 HMI DIGITAL ROBOT Servo용

5. Step-by-step instructions

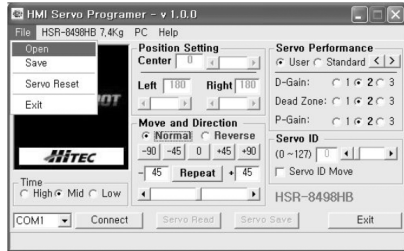
1. Select the correct serial COM port of the computer.
2. Select the type of the servo.
 - (Warning: If the incorrect servo type is selected and saved, the basic characteristics of the servo may change)
3. Start communications by clicking on 'Connect'.
 - (Warning: If the software does not connect or the connection is unstable, change the communication time to 'Mid' or 'Low'.)
4. Read the servo configuration by clicking on the 'Servo Read' button.
5. Change the center or zero point of the servo motor.
6. Setup the left and right stop positions of the servo.
7. Change the servo direction by selecting normal or reverse.
- Note: this change cannot be tested until the information has been saved and the servo disconnected from the adapter and then reconnected.**
8. Check the servo movement.
9. Setup the D-Gain, Dead Zone, and P-Gain in the Servo Performance section and repeat step 8.
10. Create an ID.
11. Click on 'Servo save' when finished.
12. When using MR-C3024 mode, change the servo port and go back to step 4.
 - (Warning: If the 'Servo read' process isn't performed, the basic setup of the control range will be lost.)
13. Click on 'Not Connect' to finish the program and turn off the servo.
14. If not satisfied with the servo's characteristics reconnect to the software and click on 'Servo Reset' in the File menu and start at step 4.

6. Save and open configuration file

Clicking on the 'Save' button in the File menu saves the current configurations as a *.hmi file.



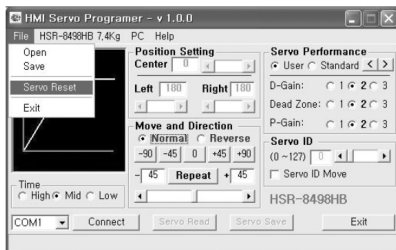
Go to 'Open' in the File menu to open other previously saved configuration files.



7. Default settings

To set the servo to its default settings, choose the servo type from the top menu. Then press 'Servo Reset' button from the File menu. The following instructions show how to reset the servo to the default settings.

1. Select the correct servo type.
2. Select the correct COM port and click on 'Connect'.
3. Select 'Servo Reset' from the menu.
4. Click on the 'Not Connect' button to disconnect.



8. Warnings

1. Although it is possible to change the servos center, left and right settings, any changes can cause quick wear and tear or severe damage. Pay strict attention to the servos mechanical stops when changing these settings. It is recommended to use the servos in robots that fit the default settings.

2. The power plug and electrical circuits must be made correctly to prevent damage to the communication port and the servo.