

**Dip Coating Machine  
For Sol-Gel Process  
Model **DipMaster™-50****



## **Owner's Manual**

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## **LIMITATION OF LIABILITY**

In no event shall CHEMAT TECHNOLOGY, INC. be held responsible, nor liable for any direct, indirect, incidental, special or consequential damages or costs whatsoever resulting from or related to the use or misuse of the DipMaster™ -50. Even if CHEMAT TECHNOLOGY, INC. has been advised, knows or should be aware of the possibility of such damages.

CHEMAT TECHNOLOGY, INC. emphasizes the importance of consulting experienced and qualified professionals to assure the best results from the use of DipMaster™ -50.

## **IMPORTANT SAFETY INSTRUCTIONS**

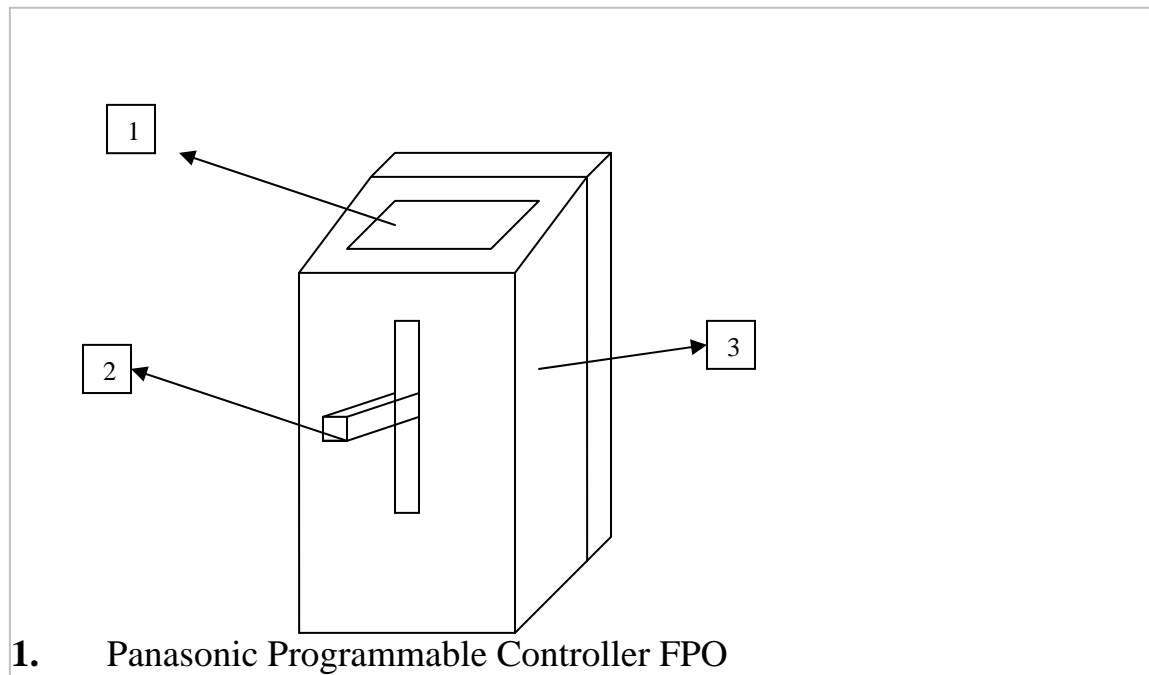
**WARNING:** When using this equipment, always exercise basic safety precautions, including the following:

1. Read all instructions before using this equipment.
2. Use this equipment only for its intended purpose as described in this booklet.
3. This equipment must be properly installed in accordance with the Installation Instructions before it is used.
4. Do not operate this machine if it has a damaged cord or plug. If it does not operate, or malfunctions, contact your local representative.
5. Do not leave heavy objects on top of the machine.
6. Keep this machine out and away of water.
7. Keep the cords away from heated surfaces.
8. If necessary, this equipment should be serviced only by qualified personnel. Any questions and uncertainties should be directed to the manufacturer for a prompt answer.
9. During the service period, all the power to the machine should be turned off.
10. Beware, and avoid contact with any hot surfaces.

## **INSTALLATION**

1. **LOCATION:** The equipment should be installed in a well ventilated area
2. **POWER:** The power supply for this machine is 110 VAC, 8 A.

# Control panel



1. Panasonic Programmable Controller FPO
2. Moving arm
3. Enclosure.

## OPERATION

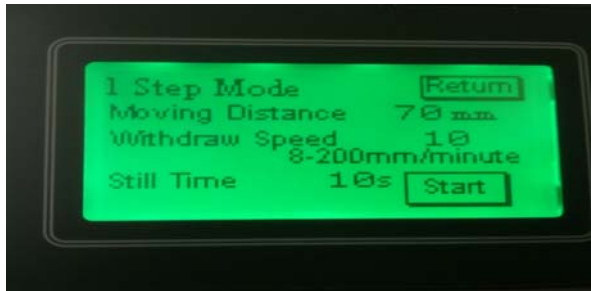
1. Substrate Loading: The DM 50 comes with a clip to which the user's substrate hanger will mount. CHEMAT TECHNOLOGY provides a number of substrate holders, and customized holders for glass, wafer, and ceramic substrates. To order, contact the sales office.  
Mount the substrate hanger evenly for better load distribution
2. Once the hanger is properly placed, turn the equipment on. The display screen should display an introductory message stating the model's name and number, and the name of the company.



3. Press on the display, the Mode Select will appear.



4. 1 STEP Mode is the simplest one but sufficient for most dip coating process. Press on “1 STEP”, the following screen will show:



Press on the numbers to select or adjust the Moving Distance, Withdraw Speed and Still Time (The time substrate stays in coating solution).

To return to the Mode Selection, simply press on “Return” or press “Start” to begin the coating process.

5. For some applications, different thickness is desired for different section of a substrate, if this is the case, “3 STEP” Mode and “8 STEP” Mode can be used to meet the requirement. On the Mode Select screen, press “3 STEPS”, the following will appear:



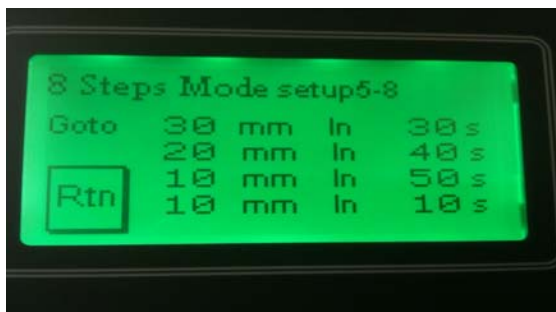
Once “Start” is pressed, the substrate will be 65 mm deep in 30 seconds from the home position, and then it will return to 35 mm deep in 10 seconds and come back in 99 seconds to the home position. Therefore, one part of the substrate will be withdrawn at the speed of 30mm/10s and another part at the speed of 35mm/99s which will result in different coating thickness on the same substrate. On the other hand, if same numbers are entered, for example “65mm”, then after 65mm depth is reached, the substrate will stay still for 10 seconds, then come back to home position with single speed of 65mm/99s which will give the same result as “1 STEP” mode.



6. Similarly, the “8 STEP” Mode will generate up to six different thicknesses on one substrate.



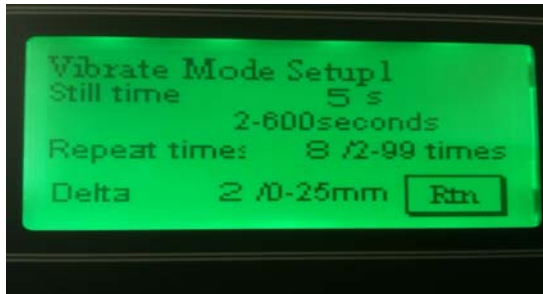
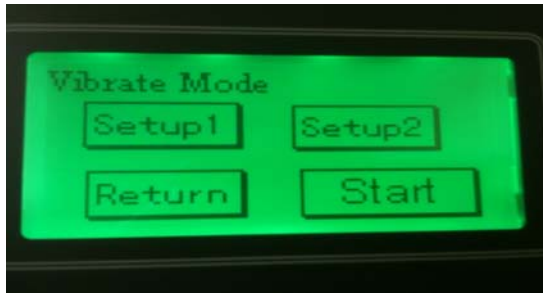
Press “Setup1” and enter total moving distance and three depths (in fact the speeds) that are desired, then press “Rtn” to go back to the “8 STEP” mode to continue the set up.



Press “Setup2” to enter the rest desired depths, then press “Rtn” to go back the “8 STEP” mode and start the coating process by pressing “Start”.

7. The vibrate mode is for the applications where a gradient thickness is needed such as lens tinting. The gradient is achieved by residing the different sections of a substrate in

the coating solution for different time of period, so the sections will absorb or put on different amount of chemical. By pressing "VIBRATE", the following screen will show:



Press "Setup1" to enter the still time or residence time, repeat times or cycles and Delta or the depth difference between each cycle, then press "Rtn" to continue the setup. Press "Setup2" on the Vibrate Mode screen, the following screen will show:



Enter the desired maximum distance or depth, down speed, and raise speed. With the example setup, the very bottom of a substrate will stay in solution for a total of  $5 \text{ sec} \times 8 = 40$  seconds, and the section 18 mm from the bottom will have a residence time of 5 seconds, and so on.