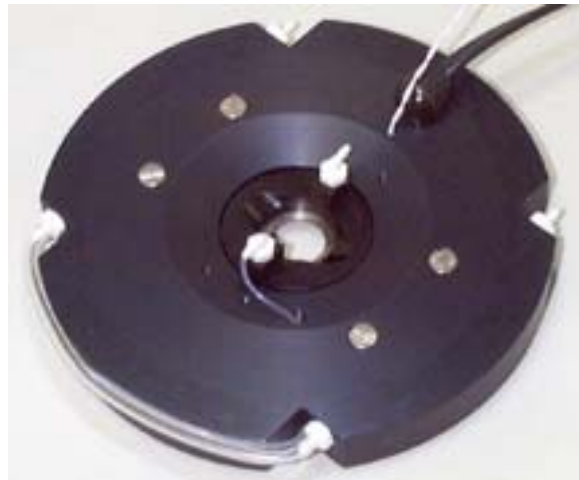




Model # HCMIS INSTRUCTION MANUAL



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Introduction

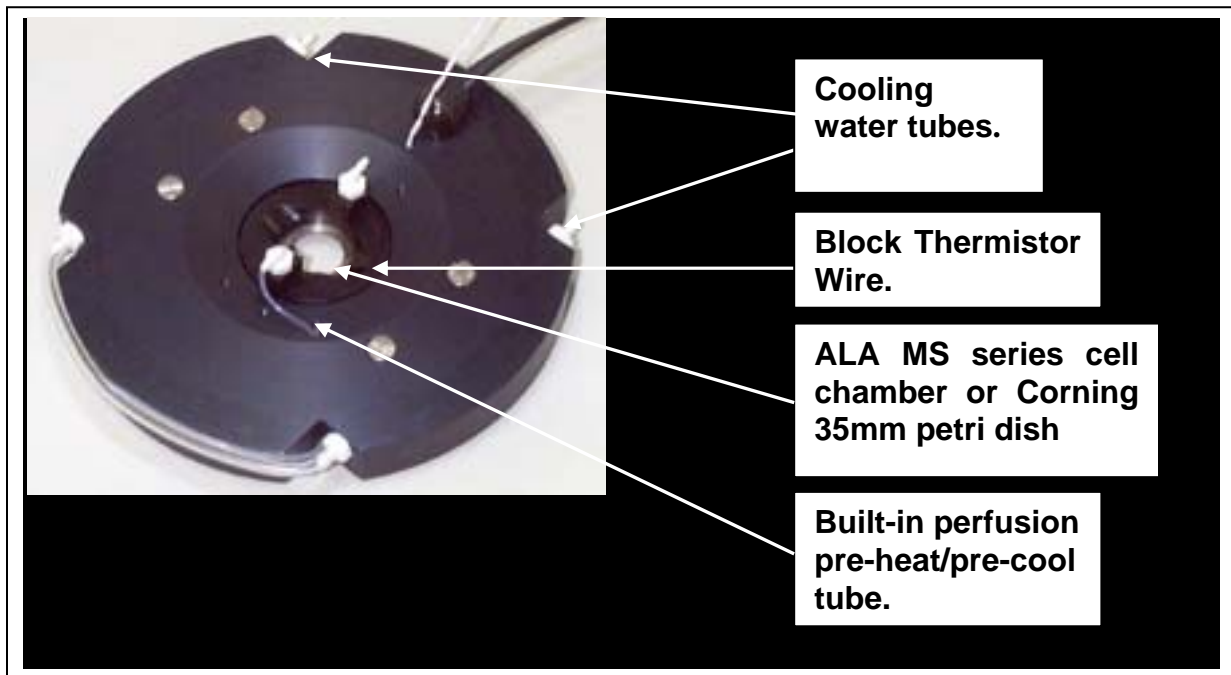
The Micro-Incubator stage you have purchased is designed to provide you with very accurate temperature control through a broad temperature range (0-45°C). The assembly is equipped with two Peltier elements, one on each side. Peltiers are thermoelectric devices. They use current passed through a field of dissimilar metals to drive heat to one side of the element. Consequently, the other side gets cool. It is possible for the cold side to be 67°C cooler than the warm side, provided that adequate cooling is provided.

The HCMIS system uses water flow-through cooling to remove the heat generated by the Peltier elements. This heat removal is essential. When the unit is in cooling mode, a substantial amount of heat will be generated. The user must insure sufficient water flow to cool the Peltiers. The water flow must be no less than 300ml/min.! Keeping the temperature of the upper part of the chamber assembly (the heat exchange part) at room temperature by flowing water through it, will give excellent stability and cold temperature range. Do not worry if your flow of water is temporarily disrupted, the mass of the upper part of the HCMIS can absorb significant heat. In fact, for cooling of up to 5°C below room temperature, no water cooling is necessary unless you see inadequate performance, or unless the system feels very hot. It is not necessary to flow cooling water when the system is in the heating mode.

It is important to insure that the flow of water is constant and bubble free so that no vibrations are induced into the chamber system. Also, periodically check the water pathway for leaks; tighten any fitting as necessary. As you may be aware, Peltier heating/cooling devices pump heat according to the voltage orientation. Thus, a Peltier driven temperature control system is switched from heating to cooling and visa versa, by a polarity switch, (+ to -, or - to +). When you install the HCMIS, you must be sure that it is connected to the temperature controller correctly. This is easily done by plugging in the stage to your controller, turning the controller on heating or cooling, while holding your hand on the bottom section of the chamber. Make sure that the bottom section responds the way it is supposed to for the setting of the controller. If it does not, reverse the polarity on the plugs to your controller's power output and the unit should function properly.

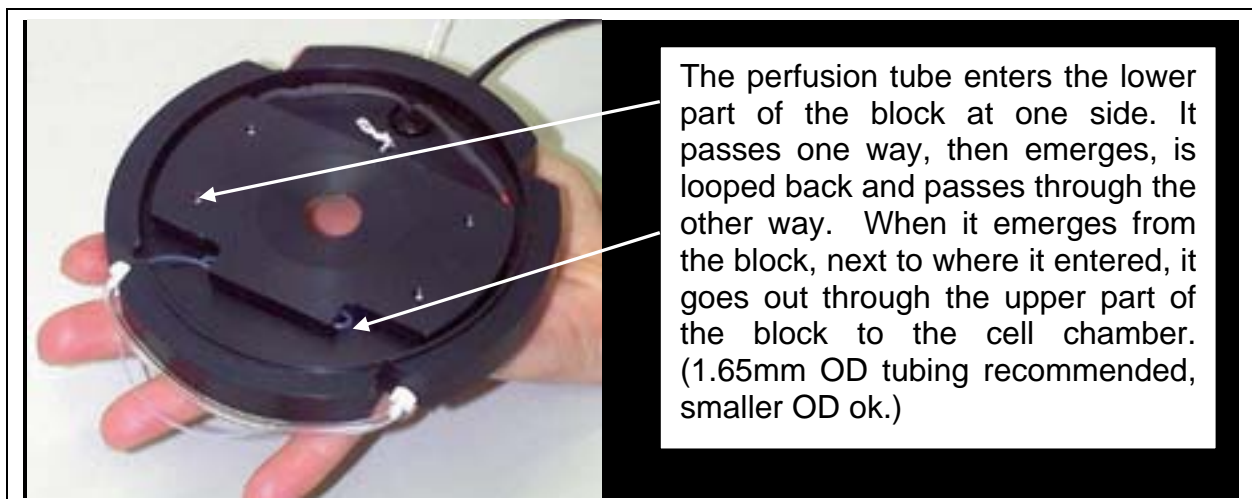
Additionally, you must be sure that your controller can provide adequate power for the HCMIS. This means at least 12VDC and 4 amp. output. If the voltage is too low the system will not work properly. Also, if your controller cannot supply enough amperage, the controller may burn out.

Product Overview



The HCMIS is placed on a microscope stage. It can be secured as necessary, but it will fit directly into an Olympus IX-SFR stage (or any other stage with a 110mm opening). When cooling, a steady flow of water of not less than 300ml/min. must be maintained through the cooling water tubes. When heating, no water is necessary. A thermistor (2250 ohms @ 25°C) is permanently installed in the chamber block for monitoring.

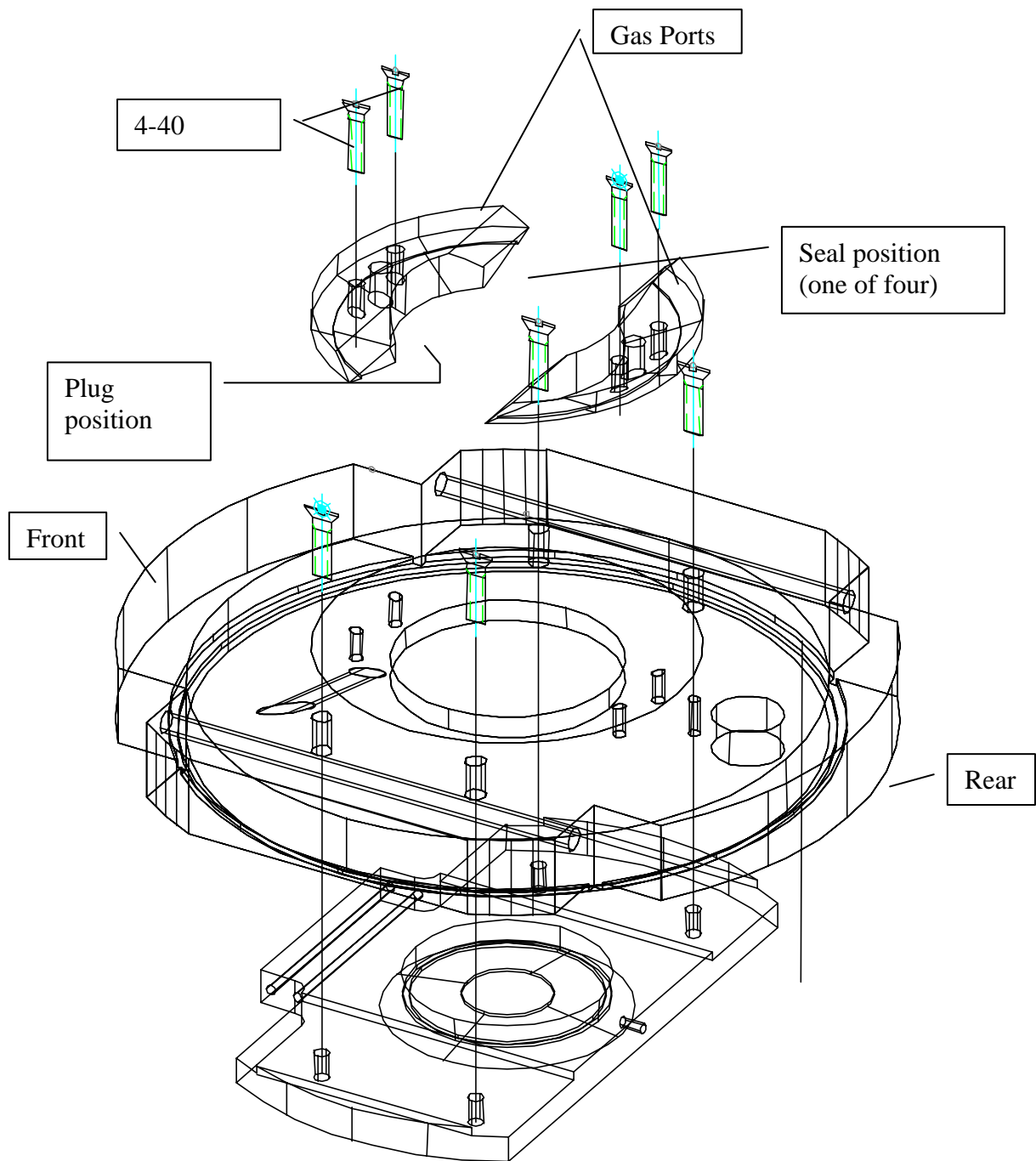
The unit is also equipped with a perfusion tube that passes through the block for pre-heating or pre-cooling perfusion solutions.



The HCMIS is equipped with a perfusion pre-heater/pre-cooler to assist in reaching the temperature requirements in your chamber. The solution can make two passes through the temperature block of 38mm each before being shunted to the cell chamber. Performance will vary greatly with flow rate and temperature set-point. Thin-wall Teflon type tubing is recommended. Be aware that heating/cooling perfusion solutions will add considerably to the energy requirements of the system, so try to optimize things as

much as possible. (If you have additional pre-heating/pre-cooling requirements, please contact your representative regarding the ALA Heated Perfusion Tube or the ALA Heating/Cooling Pre-stage.)

Explosion Diagram of HCMIS with Gas Ports



To attach gas vents to the HCMIS use the four 4-40 screws provided. Be sure that the square seals are placed at the lower ends of each vent and seal the cut-away part of the vent. Make the screws firm, but not tight. A plug is provided in one vent where the perfusion tube goes. If the tube is used, remove the plug. Replace the plug if the tube is not used, (i.e. do not leave a hole). The gas leaves the vents from a slot at the base that is formed between the HCMIS body and the vent. The slot is about 0.25mm. You

should check the slot after installing the vents by sliding a piece of paper in to confirm that the slot is open all the way across the vent. Adjust the screws as necessary.

Gas pressure will need to be determined empirically for each set up. Generally, we recommend about 10PSI (68kPa) as a guide. Certainly you may need more or less pressure. Remember that the gas is to form a curtain over the prep and you may or may not want it to create turbulence in the chamber. Also remember that when cooling, humidified gasses will cause condensation. Generally, the temperature of the gas should not cause a problem for the temperature control, but if you notice a problem, please consult your dealer or ALA directly for a solution. We do have gas warmers and coolers!

Care and Maintenance

The HCMIS should be kept clean and dry. During extended cooling in warm weather, condensation will accumulate on the lower block. Try to wipe this up periodically during operation to prevent dripping. Wipe off all salt solutions that get on the block with a damp cloth or towel. Do not immerse the block fully in water. If it should become immersed, allow it to dry for a day before attempting to re-use it. Contact your representative or the factory if there are any irregularities in performance.

Limited Warranty

ALA Scientific Instruments Inc. agrees to warranty this product for one year from the date of shipment. Said warranty covers all parts and labor necessary to remedy defects in workmanship and/or materials. Coverage is limited to repair or replacement of parts.

All units returned to ALA Scientific Instruments Inc. for repair, whether under warranty or not, must be returned freight prepaid. Freight collect will be refused and will result in longer repair times.

ALA Scientific Instruments Inc. assumes no liability for damage to or resulting from the use of this product including damage to other equipment, personal property and persons using this instrument. The user is responsible for using this instrument in accordance with this manual for the intended purpose of monitoring biological signals. Usage that is inconsistent with this intent may result in forfeiture of warranty. Please consult ALA Scientific Instruments if considering alternative applications.

THIS EQUIPMENT IS NOT INTENDED NOR APPROVED FOR CLINICAL USE IN ANY WAY AT ALL.

No other warranties are expressed or implied, your rights as a consumer may vary from state to state.

Please note: It is the buyer's responsibility to inspect this instrument upon receipt for possible damage that has resulted from shipping and to report any claim to the carrier within three business days.

If the unit is damaged in shipment, it is the buyer's responsibility to file a claim with the carrier. ALA Scientific Instruments will assist as much as possible.