



Heating-Cooling Perfusion Cube

High Flow

Model # ALA HCPC-G

Ver. 2.0
2018



The Heating Cooling Perfusion Cube G is designed to heat or cool a moving volume of liquid for use with a small cell chamber. The ideal flow rate is between 1.5 and 5ml/min. but flow can be as high as 10ml/min. The output tube supplied is about 8cm long, but results will be best if the unit is placed as close to the prep as possible. Typically, the temperature shown on the internal sensor will be within one degree of the output for the flow range listed above. The sensor is in thermal contact with both the “block” that the liquid flows through, and the liquid itself. Please keep in mind that the temperature of the out flowing liquid will decay rapidly. The further the output temperature is away from ambient temperature the more differential you may experience. Shorten the output tube as necessary to prevent heat loss/gain in the output. The most important thing is that the output tube be as close to the target as possible.

IMPORTANT INFO:

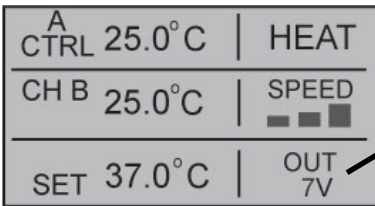
There are two very important things to note when using the HCPC-G. First, the power supplied to it cannot exceed 12 Volts. If it does, the unit will be damaged. Second, the HCPC-G needs cooling water to be sent through the heat exchanger whenever you are cooling below room temperature. Cooling water can come from a CPU cooler (ALA Coolit), or from tap water connected by tubing to the heat exchanger.

LIMITING THE POWER to Protect the HCPC-G

Limiting the power is easy with any of the ALA or npi temperature controllers. Each one features a "LIMITER" that sets a limit on the maximum voltage that can be output to a powered device. (Be sure that your controller will not exceed 12 volts).

Please refer to the manual from your temperature controller for proper set up.

ALA HCT temperature controllers



To limit the power on the HCT-10 set the voltage output to 7 volts for safety when setting up, but 12 for maximum power under high flow rates.

npi PTC Temperature Controllers

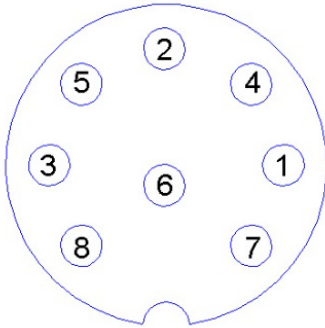


Adjust the limiter on the npi PTC to set the voltage output to max 7 volts. The limiter is active whenever the unit is in the control mode. It prevents the PTC from burning out the HCPC-G when full power is called for. The HCPC-G can handle 12V so the limiter can be turned almost to 100%

If at any time you need to check the voltage out to the HCPC, use a meter between these two outputs on the PTC.



Remember on the napi PTC that when the mode switch is set to Direct, DC Voltage will be supplied to the HCPC. The amount will be set by the pin-wheels. The number you set represents a percentage of the full power that can be applied. The Limiter is by-passed in Direct mode, so for example 500 represents 50% of 14 Volts, or 7 Volts.

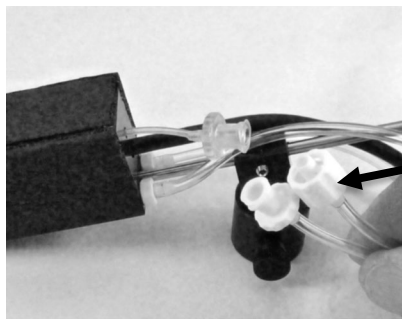


As you view the 8 pin DIN connector, Pins 1 & 2 are connected to the thermistor (2252 Ω type).

Pins 7 (+ V) & 8 (- V) are power.

Connecting Cooling Water

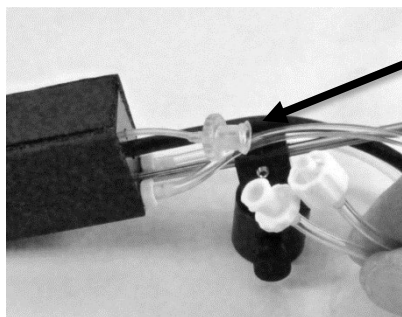
For proper operation in the cooling mode, the heat generated by the thermoelectric device must be removed. If it is not the thermoelectric will enter a feed-forward situation where heat will just continue to build up until the unit is damaged or destroyed. Proper removal of heat is easy if a flow of liquid, primarily water, of 300ml/min or more is maintained. The HCPC has two ports on the rear for connection to a water supply.



Connect a water supply to these Luer fittings for cooling. Minimum flow of 300ml/min. is required for best performance.

ALA Scientific supplies a cooling device (*Coolit*) that is ideal for cooling the HCPC.

Connecting your Perfusion Source To The HCPC-G



The input of the HCPC-G is silicone tube equipped with a female Luer connection. The ID of the silicone tube is about 1mm so most ALA manifolds can be connected directly to the tubing if the Luer is removed. Otherwise, your perfusion system can be coupled to the HCPC-G with a male Luer.

Service and Cleaning

Always flush the HCPC-G with distilled water after every use. Be sure at least 150cc of distilled water flows through the HCPC. It is also good to push out the remaining water with some air if possible and store the unit dry. Do not use more than 15 PSI (103 kPa), over pressure can damage the seals. Never submerge the unit, never let the unit run in the cooling mode without cooling fluid flowing. Clean the surface of the unit with a damp cloth or paper towel. Do not use acids or strong bases with the

HCPC. Internal seals are silicone so do not use any solvents incompatible with silicone. Never use acetone.

The HCPC-G is covered with insulating foam to improve performance.

Discontinue use immediately if a leak occurs!

The HCPC-G is not serviceable in the field, if it should become clogged or fail in any way, please contact us or a representative.

Email: support@alascience.com. Telephone in the US: 631 393 6401

Specifications

Weight	Approx. 84g
L x W x H (without mounting rod)	79 x 24 x 30mm
Internal volume	150uL
in/out tube inside diameter	1mm
Mounting Rod	100 x 3.2mm
Max. flow rate	10ml/min
Min. flow rate	1 ml/min
Max. power	28 W
Max. cooling	20 W
Thermistor type	2252Ω
Coolant flow requirement	No less than 300ml/min
Maximum Voltage	12.0V
Max. Amps	2.5A

Warranty

ALA Scientific Instruments, Inc. agrees to warranty this product against defects in material and/or workmanship for six months from the date of shipment. Remedy shall be limited to replacement or repair of the item(s) at ALA Scientific's discretion. The usage of this product by the user will indicate the users understanding of the use of this product as set forth in this manual. Neither ALA Scientific Instruments, Inc., nor any of its affiliates will be held responsible for damage to laboratory equipment, including microscopes, resulting from the use or misuse of this product, including damage resulting from inputs exceeding specified limits that result in malfunction. This warranty does not cover corrosion or failure of this device due to oxidation of wetted materials resulting from use.

If device repairs are necessary, shipping charges to the factory are the customer's responsibility.

Contact your distributor or support@alascience.com for repairs and information on service.

This instrument is not for clinical use. It is strictly for basic research in a laboratory setting. It has no clinical application whatsoever and cannot be used on human subjects.