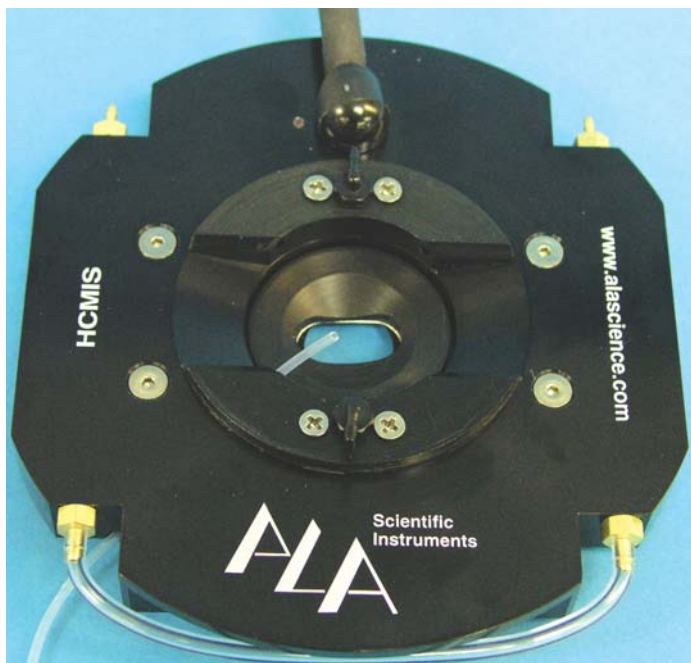


HCMIS, Cooling / Heating MicroIncubator System

Investigators who perform electrophysiology or imaging experiments in-vitro often choose to perform experiments at non-ambient temperatures in order to elucidate mechanisms or to enhance physiological relevance. This capability can be added to almost any setup with the **ALA HCMIS** and an npi bipolar temperature controller.

HCMIS Features:



HCMIS shown with gas ports installed at top and MS-518 chamber in middle

- * Dual Peltiers and anodized Al construction ensure uniform heat exchange.
- * Base fits all major manufacturers' stages & platforms.
- * Chamber well accommodates MS recording chambers or 35 mm Petri dishes.
- * Chamber design compatible with immersion objectives.
- * Chamber wall cut-outs ease electrode access.
- * In-line temperature control of perfusate included .
- * Shielded flexible cable minimizes electrical noise.
- * Low-profile & built-in water ports minimize vibration during cooling.
- * Optional gas ports enable oxygenation of slice preparations.
- * Built-in thermistor for monitoring block temperature.

The **ALA HCMIS** simplifies temperature control for demanding electrophysiology and imaging applications. The grooved bottom of the instrument allows it to fit snugly on Nikon, Olympus and Zeiss microscope stages as well as Exfo and Narishige platforms. For cooling applications, the sideports enable water circulation to cool preparation to near freezing temperatures. The optional gas ports allow gas to flow over bath when necessary, for improved oxygenation and pH control with bicarbonate based buffers. A flexible, shielded, multiconductor cable attaches the **HCMIS** to the npi electronic heating/cooling controllers that feature PI controllers and automated shut-off features for unparalleled control and protection.

Specifications

HCMIS - Dimension & Weight	127x116x16 mm LWH - 375g
Max Volts/Amps	14.4V/3.7A
Perfusion Tubing	PTFE - 2.4mm ID x 3.8mm OD
Min./Max. Temperature	0°C to 55°C
Perfusion tubing recommended flow rates	0 to 2ml/min
Recommended heat sink water flow	>300ml/min
Typical temperature ramp speeds using PTC-20, block control	25°C to 13°C - 2:30 min. / 25°C to 37°C - 1:45 min. gain/limiter = 75%, integral = 0%
Typical temperature ramp speed w/PTC-20, block control, MS502SW chamber, 1ml fluid, heat sink water flow, bath probe monitoring	22°C to 10°C - 2:30 min. / 22°C to 37°C - 1:45 min. gain/limiter = 75%, integral = 0%
Microscopes and platforms supported w/o adapter plates	Nikon TESR stage, Olympus IX stages w/110mm opening, Zeiss frame K, Exfo Gibraltar, Narishige ITS - other stages available
Cable information	8 conductor; 2 for Peltiers, 2 for built-in thermistor, 4 unused, with DIN connector

npi Bipolar Temperature Controllers

Performing patch clamp and imaging experiments at non-ambient temperatures requires instruments that maintain these temperatures consistently and accurately without compromising sensitive electrical or optical measurements. npi electronics' **PTC-10**, single-channel, and **PTC-20**, dual-channel, bipolar controllers include all of the essential features that make these experiments possible.



PTC-10 & PTC-20 Features:

- * Digital or manual controlled temperature commands (3°C - 45°C)
- * Flexible sensor placement; third-party sensors OK.
- * Display temperatures from two sensors simultaneously (e.g. block and bath).
- * Tune proportional and integral controller for optimizing response speed and accuracy.
- * Select unipolar output to configure for heat-only applications (resistive element heating).
- * Adjust maximal output voltage limit to protect sensitive heating elements.
- * High-current DC power supply minimizes electrical noise.
- * Short-circuit shutoff protects heating elements and electronics from sensor malfunction.

Ordering information

ALA HCMIS	Heating/Cooling MicroIncubator Stage
ALA HCMIS-GAS	Gas perfusion add-on ports for HCMIS
ALA TS-1	Additional thermistor standard size
ALA TS-2	Additional thermistor sensor miniature size
ALA THERDIN	Thermistor cable
ALA DIN/DINCABLE	Extension DIN to DIN cable for HCMIS - 6'/2m
npi PTC-10	Single channel bipolar temperature controller
npi PTC-20	Dual channel bipolar temperature controller

Specifications

PTC-10 / PTC-20	19" rack mount - 483 mm x 360 mm x 88 mm LWH
Dimension & Weight	8 kg (PTC-10) 10 kg (PTC-20)
Power Requirements	115 / 230 VAC (160 VA - PTC-10) (225 VA - PTC-20)
Power Output	+/- 15 V / (5A - PTC-10) (3A - PTC-20) each channel
Accuracy	+/- 0.2°C typically
Standard output and input calibration	10 mV / °C
Measuring accuracy	+/-0.1 °C @ 25 °C typically
Alarm and auto shut-off	Below 1-2 °C or above 45 °C