



TC-202A Temperature Controller



The TC-202A is a switchable bipolar/monopolar temperature controller that is ideally suited for regulating temperature of microscope stage, micro-incubators and brain slice chambers. Use with both resistive heating and thermoelectric (Peltier) devices, is possible. The system has been designed for low electrical noise emissions to minimize interference with sensitive electrophysiological measurements from temperature stabilized cells or cell patches.

In the bipolar mode the TC-202A can be used with Harvard/Medical Systems, Inc's thermoelectric heat pump operated Open Perfusion Micro-Incubator (PDMI-2), Patch Slice Micro-Incubator (PSMI) and Chambered Slide Micro-Incubator (CSMI).

In the monopolar mode the TC-202A can be used with resistive heater devices such as the Leiden Micro-Incubator (LU-CB1), Leiden Closed Perfusion Chamber (LU-CPC-CEH), and the Brain/Tissue Slices System (BSC-BU).

The unit features a digital display to help set command temperature and a digital thermometer to allow precise monitoring of tissue temperature.

- **Low Electrical Noise for Sensitive Electrophysiology Recordings**
- **Excellent Long Term Temperature Stability**
- **Versatile Monopolar/Bipolar Operation**
- **Digital Set Point and Temperature**
- **Temperature Profile Monitoring Capability**

Accurate temperature control ($\pm 0.1^\circ\text{C}$) is achieved by sensing temperature with a miniature thermistor.

The difference between the set point temperature and measured temperature is used to control a proportional low noise DC heating/cooling current. The dynamic characteristics of the system are optimized for the matching micro-incubators, to minimize any initial setup temperature overshoot or oscillation about the set point.

When used with the PDMI-2, PSMI or CSMI micro-incubators, two different control reference points for temperature can be selected. One is from the temperature of a 'bath' thermistor placed in the media holding the tissue or cells. In situations where a 'bath' thermistor cannot be used, a thermistors embedded in the temperature driven metal 'plate' which hold the media dish can substitute.

The 'plate' mounted thermistor in the PDMI-2, PSMI, and CSMI also serves as a safety power shutoff sensor should the temperature driven plate get too hot for any reason.

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Specifications:

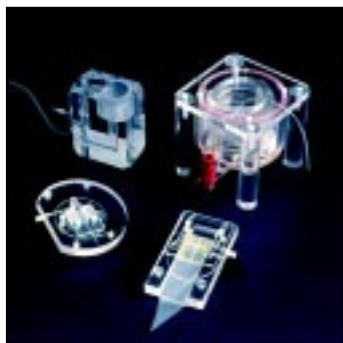
Temperature Set Range	0°C to 50°C ($\pm 0.1^\circ\text{C}$)
Temperature Regulation	0.1°C (bath control)
Temperature Display	0.1°C resolution
Temperature Sensor	Bath Thermistor: 36K ohms nominal @ 25C Plate Thermistor: 100K ohms nominal @ 25C
Output Voltage Range	± 8 V DC
Output Current Range	± 6 A (max)
Case Size	17" x 3.5" x 13.25" 19" Rack Mountable
Weight	12.5 lbs.
Power Consumption	< 70 V A
Fuse	3 A
Voltage (Main Supply)	100-120 or 200-240 V AC (user selectable)



Open Perfusion Micro-Incubator
Model: PDMI-2



Patch Slice Micro-Incubator
Model: PSMI



Brain/Tissue Slice System
Model: BSC-BU (Base Unit),
BSC-ZT, BSC-HT, BSC-PC



Leiden Closed Perfusion Chamber
Model: LU-CPC-CEH



Leiden Micro-Incubator
Model: LU-CB1

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A P P A R A T U S



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