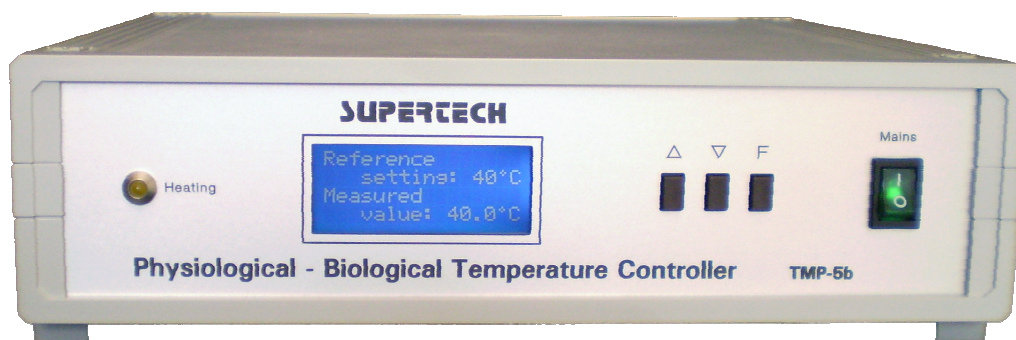


Physiological-Biological Temperature Controller TMP-5b

For the optimal Temperature Management of experimental animals

Control Unit



Small Animal Heating Pads

Come with practical, stainless steel cover and non-skidding rubber feet. Contain internal temperature sensors. Waterproof, easy to clean. One control unit powers one heater plate at a time.

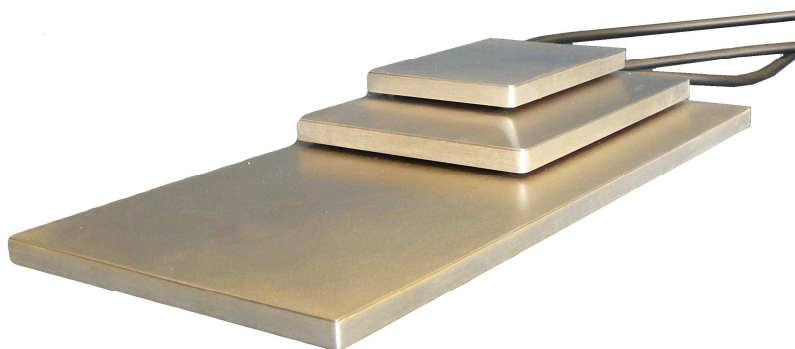
Standard sizes:

- 115 x 80 mm, 12W
- 170 x 115 mm, 24W
- 330 x 145 mm, 36W

A metric M4 screw is provided for secure grounding and shielding (optional).

General Description

Specially designed for the temperature management of experimental animals, TMP-5b was built to suit the requirements of any sophisticated electrophysiology application, including patch clamp setups. It does not generate hum noise and its output is as smooth as the current of a lead battery. The controller unit adjusts the temperature of the heating pad under the experimental animal. Settings of the required temperature ('Reference setting') can be managed using straightforward front panel controls. The temperature of the heating pad or alternatively the temperature sensed by a rectal thermometer, ('Measured value') is continuously communicated to and processed by the controller unit which produces the optimal amount of heating currents when necessary. The DC current applied is virtually noise free. The entire setup is regulated by a microcontroller which produces the required temperature through calculating the heat capacity, the thermal time constant and through minimizing the thermal hysteresis of the system to be controlled. Characterized by clear-cut practicality and a reliable performance, TMP-5b is an ideal choice.



Front panel controls

Mains: Power switch, turns the unit ON or OFF.

F (Function): Saves the temperature values set by the 'Up' or 'Down' buttons. The system defaults to these saved values upon the next power-up. Pressing 'F' jumps to the main menu at any time.

Up and Down Arrow Buttons: Set the required actual temperature or the max selectable temperature. The former can be changed at any time. The latter can be set when the unit is turned on while button 'F' is being pressed. Save either of these values for future use by pressing 'F' after the temperature selection is made.

Liquid Crystal Display (LCD): During normal operations, the blue-backlit LCD panel displays the set (required temperature or 'Reference setting') and the actual temperature ('Measured value') reported back by the heating plate or any other external temperature sensor. In faulty conditions, an error message appears and a warning beep sound can be heard.

Heating: This LED turns on when current flows through the heating pad from the main unit.

Warning sound: A signal warns to faulty operating conditions and an error message appears on the LCD display.

Back panel view



Back panel controls:

AC input: Universal grounded power input.

Heating plate: A three-pronged lockable connector powers the heating plate. Pin-out is as shown. Sensor input refers to the internal temperature sensor (DS 18S20) built in the heater plate.

Toggle switch: Toggles the source of the temperature sensing between the 'Internal' (heater plate) and the optional 'External' (e.g. rectal temperature probe) digital thermometers.

Sensor input: An external digital thermometer (DS 18S20) such as the optional rectal temperature probe can be connected here.

Error messages:

'FAULT! I can not find the sensor!' text appears when the temperature sensor is missing or improperly connected.

'FAULT! Thermal connection lost!' message appears when the temperature sensor is properly connected but it does not sense any change in the temperature in response to the heating current applied to the heater plate.

A loud warning sound is made when an error message is displayed.

Specifications:

Heating voltage:	12 VDC, noise-free
Heater plate power:	36 W, maximum
Temperature range:	From 0 to 120 °C (Temp Controller)
Temperature range:	From 0 to 50 °C (Heating Pad)
Temperature sensor:	DS I 8S20 digital thermometer
Temperature resolution:	0.1 °C
Thermal hysteresis of plates:	0.5 °C, maximum
Mains voltage:	100-120 or 220-240 VAC, factory set
Frequency:	47-63 Hz
System power consumption:	80 VA, maximum
Case material:	ABS plastic, aluminum panels
Dimensions (WxHxD):	290 x 90 x 250 mm (11.42"x 3.54"x 8.84")
Weight:	2.8 kg (6.2 lbs)
Memory:	Flash program, non-volatile EEPROM

Attention:

This instrument is for experimental purposes only and is not intended for human use. Electrical safety measures of operating the 115/230 VAC main unit is the sole responsibility of the user.

Warranty:

Supertech Ltd gives you 5 years of full warranty for its electronical products against defects in materials or workmanship as long as the equipment has been subjected to normal and proper use. During this period, faulty products will be repaired or replaced free of charge provided they are returned to our workshop. (Postage prepaid by the Customer.) Supertech Ltd will undertake the servicing and calibration after the expiration of the warranty period for a nominal fee.