

## Increasing-Temperature Hot-Plate test equipment

Our newly developed hot-plate was designed for determining the pain threshold in rats or mice. The temperature is slowly increasing with variable heating rates from non-noxious levels until a response is observed or a cut-off temperature is reached. The response is the licking of the hindpaw, and the corresponding plate temperature represents the recorded nociceptive end-point. The advantage of Increasing-Temperature Hot-Plate test over the standard constant-temperature hot-plate test is the higher sensitivity (better in studying the analgesic effects of mild analgesics), and the lack of influences of pre-exposure to the hot-plate before testing.

The equipment is controlled by an IBM-compatible industrial standard PC through its standard Centronics (parallel) port. All the parameters are controlled by the program running on the computer. Moreover the cut-off temperature for safety's sake is controlled by the built-in microcontroller located in the Increasing-Temperature Hot-Plate equipment, too. A plexiglass box is placed on the top of the plate for possible clear observation of the animal.

### Technical data:

Heating elements: a delicate heater surface structure was developed especially to use in this equipment

Maximal temperature difference between the centre and the edge of the plate: 0.5 °C

Heating rates: can be set from 1 °C/min to 6 °C/min, controlled by the PC software. The equipment can be used with higher heating rates (up to 12 °C/min), but the temperature difference on the plate will be increased over the specified value in such cases

Cooling: contact heat dissipation

The size of the working surface: 200 mm x 150 mm

The height and the volume of the plexiglass box: 250 mm, 3 liters

Computer program: requires an IBM-compatible PC running under MS Windows 98 (or higher) operating system

Starting temperature of the measurements: room temperature

Cut-off temperature (hardware, and firmware controlled): can be set from 30 °C to 54 °C

Cut-off temperature (controlled by the PC software): can be set from 30 °C to 54 °C

Supply specification: 200 - 240 V AC, or 100 -120 V AC (it should be specified in the order), 50 - 60 Hz

Power requirement: 100 W

Dimensions without the plexiglass box: 330 x 260 x 130 mm

Weight: 6 kg

### References:

Hunskar, S., Berge, O.G., Hole, K.: A modified hot-plate test sensitive to mild analgesics. *Behav. Brain Res.* 2: 101-108, 1986.

Tjolsen, A., Rosland, J.H., Berge, O.G., Hole, K.: The increasing-temperature hot-plate test: an improved test of nociception in mice and rats. *J. Pharmacol. Methods* 3: 241-250, 1991.

Almasi, R., Petho, G., Bolcskei, K., Szolcsanyi, J.: Effect of resiniferatoxin on the noxious heat threshold temperature in the rat: a novel heat allodynia model sensitive to analgesics. *British Journal of Pharmacology*, 139(1): 49-58, 2003.