

Hot/Cold Plate

Screening of Thermal Hyperalgesia/Allodynia

Introduction

The **hot cold plate test** has been the gold standard test for thermal pain tests in rodents for decades. Through the years the devices have been improving and the techniques have become more sophisticated, adding to constant temperature methods also other ones.

The **Hot/Cold Plate** device includes all the latest technologies necessary to run constant temperature, linear ramping temperature (toward hot or toward cold) and complex temperature ramps thanks to the included X-Pad software.

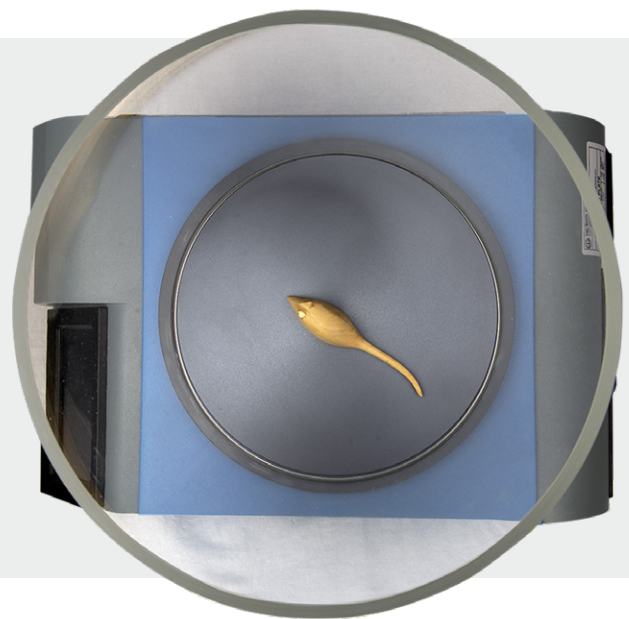
Moreover, the new model **includes a keypad** (cabled or optional Bluetooth) to score pain endpoints or stereotyped behaviors.

Temperature range goes from -5° to 65°C and animal holders of different heights are available.



Latest features

- External keypad for scoring animal behavior
- Completely re-designed interface for a better user experience
- Real time temperature graph
- Improved silent operation
- Very accurate plate temperature
- Possibility to choose Fahrenheit or Celsius measurement unit



Features and Benefits

- KEYPAD AND PEDAL FOR SCORING PAIN ANIMAL RESPONSES**
 Possibility to use the preset 10 keys or modify them (licking, scratching, jumping, grooming, vocalization, rearing, immobility, climbing, shivering, twitching) and save the results in the electronic unit and .csv file.
- FIXED, RAMPING AND COMPLEX RAMP TEMPERATURE MODES**
 Flexibility for performing many types of pain experiments from allodynia to hyperalgesia, in neuropathic pain and inflammation
- BROAD RANGE OF TEMPERATURES (-5° TO -65°)**
 Allows to perform any sort of thermal sensitivity experiment, including severe cold allodynia.
- AMBIENT TEMPERATURE SENSOR IS PLACED OUTSIDE OF THE DEVICE**
 Improved thermal accuracy for ambient temperature measurement.
- IMPROVED SILENT OPERATION**
 The Peltier elements combine a fast temperature reach with an improved silent operation for less external disturbance to the animal

Application

The advantages of the hot/cold plate are the broad temperature range and hence the possibility to assess both hot and cold allodynia and hyperalgesia.

In the last years the tendency has been to use the increasing/decreasing mode more and more frequently to differentiate nociceptor subtypes and hence detect both hyperalgesia and allodynia.

A typical application is during inflammatory pain, as well as in neuropathic pain and to test compounds with anti-nociceptive effects, for example after chronic constriction injury (CCI) or other methods.

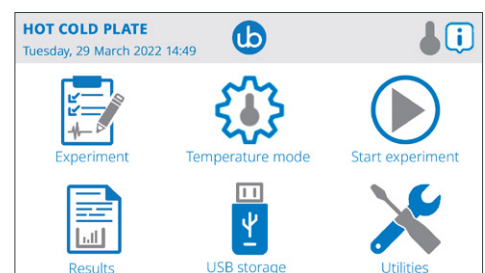
The test is mainly used in rodents, but we have seen use in Drosophila as well (see literature below, Massingham et al. 2021).

The new model which incorporates now, at **no extra cost**, the keypad allows for scoring several behaviors, which before was possible only by videotaping and reviewing the videos, while now it can all be done on-line, during the test.

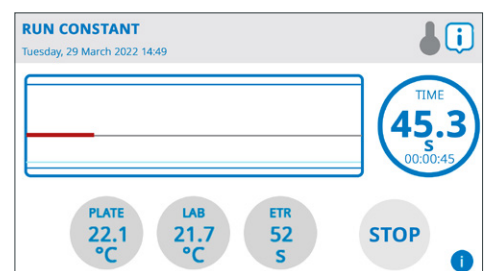


Specifications

Plate temperature range	-5.0°C to +65°C (in 0.1°C steps)
Accuracy	+/- 0.2°C
Mode	Fixed temperature, Ramp (increasing or decreasing), Silent, Fast Ramp, Custom Ramp
Start	By START button or pedal switch
Stop	By STOP button or pedal switch
Experiment duration	Max 999.9 seconds
Data Acquisition	Via X-PAD software (included)
Data Portability	By USB flash drive (included)
Data Input	Personalized protocol
Data Output	Results table in .csv
Command input & read out	4.3" touch-screen (resistive)
Power Requirement	Universal input 100-240 VAC, 50-60Hz, 200W MAX
Sound level	Max 70Db
Operating temperature	18°C to 25°C
Detection	By pedal switch and via numeric key pad



New user-friendly interface



Live view of the running experiment

