PAM

PRESSURE APPLICATION MEASUREMENT
Cat. No. 38500

General

The new P.A.M. (Pressure Application Measurement) device from Ugo Basile is a novel, easy-to-use tool for measuring mechanical pain threshold in experimental **joint hypersensitivity models in rodents.**
The PAM device has been designed and validated specifically for the mechanical stimulation and assessment of **joint pain**, and therefore is especially useful in studying **arthritis**.The PAM device applies a quantifiable force for **direct stimulation of the joint** and for automatic readout of the response.

The operator simply wears a special force sensor on his or her thumb and measures the force which elicits the animal response (normally, limb withdrawal).
Each PAM device comes standard with two force sensors, which have been specially designed to apply force to **rat and mouse joints**. The area stimulated using the **small sensor** is useful for mice. The **large sensor** is useful for stimulating either mice or rat joints.

Joint Pain

Arthritis

MECHANICAL PAIN THRESHOLD IN:

- Joint Hypersensitivity
- Chronic Joint Inflammation

Main Features

- Maximum Applicable Force: 1500 gf
- Resolution: 0,1 g
- Automatic recording of Limb Withdrawal
- User-controlled application of pressure directly to the joint

Ugo Basile: more than 10,000 citations

Rationale of the Technique

Arthritis is associated with chronic, debilitating pain in the joints. Current metrics of arthritic pain are indirect, by interviewing patients in a clinical setting or, in animal models, by scoring the level of motor activity or the animal's weight distribution (Barton et al. 2007). Current indirect tests, such as the weight distribution (Incapacitance Tester, Linton, UK), correlate well with the level of joint pain, but such a metric is a composite picture of complex pain responses, and provides little discrete information about local stimulation and locally-evoked responses.

The quantification of localized joint hypersensitivity is common in the clinic, but not in animal experiments. In this sense the new PAM device represents a step forward toward a multifactorial measurement of pain-related behavior in animal research.

The PAM device is the first and only instrument **designed specifically to apply force to the joint** and automatically detect the animal's response.

Instrument Configuration

Pressure transducers: the PAM device comes with 2 different transducers. Each has been tested and validated in the mouse and rat knee joints: **small transducer** is flat and round (ideal for mouse knee joint), **large transducer** is flat and round (ideal for rat knee joint).

Fig. 1: "Joint Transducer"

An optional **paw transducer applicator** is also available which rapidly transforms the PAM into a Digital Randall-Sellitto for pressure application on paws, muscles, tail.

Fig. 2: "Paw Transducer"

Fig. 3: "PAM device standard package (PN 38500), shown with pedal switch, small and large joint transducer and Usb cable".

Electronic Unit: The compact electronic controller connects to the mains power or can be battery-operated. A foot pedal switch is provided for manual score of the peak force applied.

Data Acquisition and Software: the PAM device has an internal memory for data storage and also includes dedicated acquisition software.

Acknowledgements

The PAM device was invented and validated in the University of Edinburgh by the team of Prof. Daniel McQueen, Susan Bond and colleagues and Dr. Harry Brash, who built the first prototypes.

Ordering Information

38500	**PAM**, includes the following parts:
38500-001	Electronic Unit
38500-002	**Large** Joint Transducer
38500-003	**Small** Joint Transducer
38500-010	Software
38500-303	Pedal Switch

Options

38500-006	Paw Transducer

Bibliography

• N. J. Barton et al. *2007* Pressure application measurement (PAM): "**A novel behavioural technique for measuring hypersensitivity in a rat model of joint pain**". *Journal of Neuroscience Methods 163, 67–75.*