

PAM

*Pressure Application Measurement
for joint pain*



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PAM PRESSURE APPLICATION MEASUREMENT

Original tool designed for measuring mechanical pain threshold on joints, especially suited to assess joint hypersensitivity in rodent knees or ankles.



Background



The P.A.M. (Pressure Application Measurement) device is an original tool designed for **measuring mechanical pain threshold on rodent joints**.

It was specifically **designed and validated for Arthritis research** and is therefore especially suited to **assess joint hypersensitivity in rodent knees or ankles**.

Once peak force levels are automatically scored thanks to the **force peak detection algorithm**, data is saved and can then be browsed on the control unit and/or transferred to a PC in proprietary, Excel or text format.

It **can also be used as a Paw Pressure Measurement system** with the right adaptor (PN 38500-006).

Typical device applications



The PAM applies a quantifiable force for direct stimulation of the joint delivering an automatic readout of the animal response.

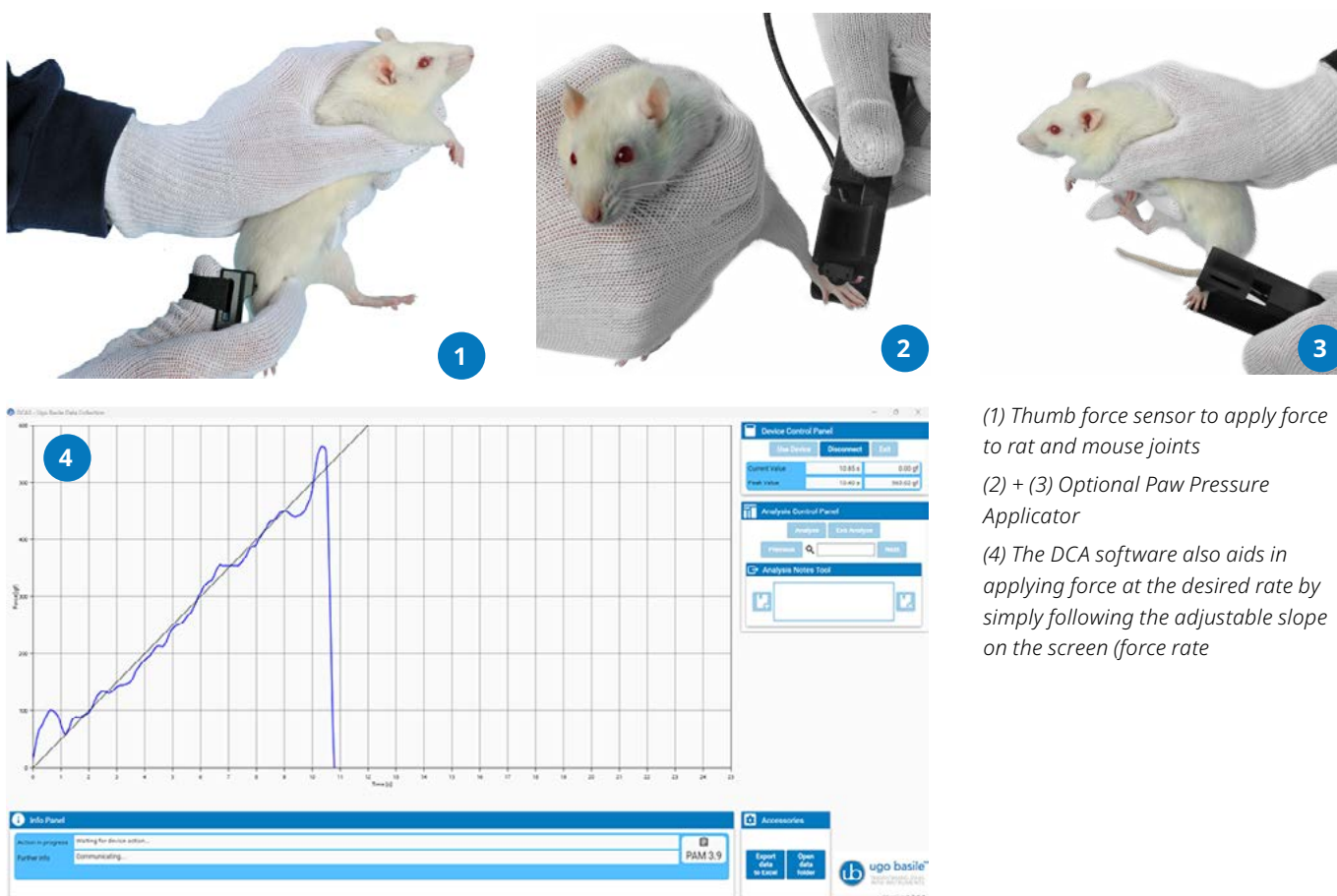
The PAM was initially designed for Rheumatoid Arthritis, but it can obviously be used for many applications in pain and inflammation research which aim at the assessment of the joint nociceptive threshold or at the threshold also in other parts of the

body in rodents or large animals (with a special adaptor).

Since its introduction, more than 10 years ago, dozens of papers have been published on several type of inflammation models and nociception studies in general (see references below). These include the most classic arthritis, fibromyalgia, induced joint damage, induced musculoskeletal pain, and many others.

Product Description

- The PAM applies a quantifiable force for direct stimulation of the joint and for automatic readout of the paw/joint withdrawal response.
- The operator is ensured high sensitivity by wearing the sensor directly on the thumb.
- The operator simply wears a special force sensor on his or her thumb and the peak amplifier measures the force which elicits the animal response (normally, limb withdrawal) through a force peak detection algorithm.
- Each PAM device comes standard with two pre-calibrated force sensors, which have been specially designed to apply force to rat and mouse joints.
- The device includes as standard both a control unit with two sensors of different sizes, and the NEW DCA software for signal monitoring, data transfer and analysis. Once saved, data can be browsed on the control unit and/or transferred to a PC in proprietary, Excel (.xls) or text (.txt) format, to be managed by most statistical analysis packages available on the market.
- The DCA software also aids in applying force at the desired rate by simply following the adjustable slope on the screen (force rate).
- The PAM device can also be used to measure mechanical sensitivity in the mouse or rat paw, by using a specific Paw Pressure Transducer (optional).



Features

Benefits

The force is applied directly to the joint	Direct measurement of evoked pain on the specific site
Pre-calibrated force transducers	No calibration needed
Specifically designed for arthritis research	The applicators are shaped for rodents knee and ankle
Paw pressure transducer as an optional	PAM can also be used as a hand-held Randall-Selitto device
Foot pedal included	Also manual scoring is possible for those cases when the automatic peak detector cannot be used
Software included	Easy data export in csv and slope function to apply the desired force rate constantly

Main references

- Tamai et al., 2023, "[Transient receptor potential ankyrin 1 in the knee is involved in osteoarthritis pain](#)", Biochemistry and Biophysics Reports
- Singh et al., 2020, "[Protective Effect of Esculetin, Natural Coumarin in Mice Model of Fibromyalgia: Targeting Pro-Inflammatory Cytokines and MAO-A](#)", Neurochemical Research
- Obeidat et al., 2020, "[Effect of systemically delivered zoledronic acid on joint damage, nociceptive knee innervation and pain after destabilization of the medial meniscus in mice](#)", Osteoarthritis and Cartilage
- Kaur et al., 2019, "[Ameliorative effect of imperatorin in chemically induced fibromyalgia: Role of NMDA/NFkB mediated downstream signaling](#)", Biochemical Pharmacology
- Di Giminiani et al., 2017, "[Characterization of short- and long-term mechanical sensitisation following surgical tail amputation in pigs](#)", Nature
- Leuchtweis et al., 2010, "[Validation of the digital pressure application measurement \(PAM\) device for detection of primary hyperalgesia in rat and mouse antigen-induced knee joint arthritis](#)", Methods and Findings in Experimental and Clinical Pharmacology

Specifications - Operation

Commands	Via soft buttons and pedal
Read-out	LCD Screen, via the DCA3 Software on the PC
Start	Automatic start at pressure adjustable threshold
Stop	Automatic at end of pressure, Automatic after a time limit (adjustable from 5 to 25 seconds), Manual by pedal
Force Ranges	0-500gf, 0-1500gf
Force Increasing Rate	Monitored via PAM Electronic Unit or via the DCA3 Software on the PC
Force Response	in 0.1gf steps
Latency Time	in 0.1s steps
Connection to PC	via USB cable (A to mini-B) and PAM Software (DCA3)
Power Requirement	Either battery operated, via USB cable connected to PC, included power supply (100-240 VAC, 50-60Hz)

Physical

Total Weight	0.8Kg
Shipping Weight	2.7Kg approx.
Dimensions	12(w)x15(d)x4,5(h) cm
Packing Dimensions	46x38x27cm

Ordering informations

38500 PAM	38500 PAM Pressure Application Measurement comes complete with: 38500-001 Electronic Unit; 38500-002 Large Joint Transducer (Rat); 38500-003 Small Joint Transducer (Mouse); 38500-303 Pedal Switch for 38500, 38450, 47200; 52010-325 USB Cable; E-AU 059 Universal Power Supply; E-AU 101 USB pen-drive, including Instruction Manual and Software
38550 PAM for large animals	PAM Pressure Application Measurement for large animals comes complete with 38500-001 Electronic Unit; 38500-010 Software; 38500-016 PAM Paw Pressure Applicator, special high pressure model for large animals, complete with transducer and 3 probes (cone and filaments) of different shape/size; 38500-303 Pedal Switch for 38500, 38450, 47200; 38450-330 Spare filament with magnetic attachment; 38550-320 Spare filament (short) for PAM 38550 with magnetic fixing system; 38550-321 Spare Perspex pointed pusher for PAM 38550, with magnetic fixing system ; 52010-325 USB Cable; E-AU 059 Universal Power Supply; E-AU 101 USB pen-drive, including Instruction Manual and Software

Optional Items

38500-006	Paw Pressure Applicator
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Extra warranty (standard 12 months + 12 months with product registration) available

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more than 40,000 citations in the main bibliographic search engines.

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