

DEPRESSION

Forced Swim.	2-3
Triadic Wheel Turn	4-7
Tail Suspension.	8-11





PACKAGE CONTENTS				
A = MED-FSN				
#	SKU	DESCRIPTION	A	
1	ENV-591	Forced Swim Test Cubicle	A	
1	NIR-100L2B	NIR VFC Light Box w/High Output LED	A	
1	NIR-100VR	NIR/White Light Control Box	A	
1	NIR-101	Light Control Input Cable, 8-Pin Molex	A	
1	NIR-102	Light Control Interface Cable, 3-Pin	A	

Typically used to conduct the Porsolt forced swim test, a commonly used screening method for assessing antidepressant activity. Porsolt pioneered the use of rodents in depressive models, and the efficacy of anti-depressive compounds in them.

Rodents are put into the cylindrical container filled with water. By forcing a mouse to swim in this aversive/restrictive space it will actively struggle for a few minutes, but eventually stop moving and become noticeably weary, making only small movements to keep their head above water.

Porsolt (et al) called this state of hopelessness “behavioral despair” and compared it to a human experiencing

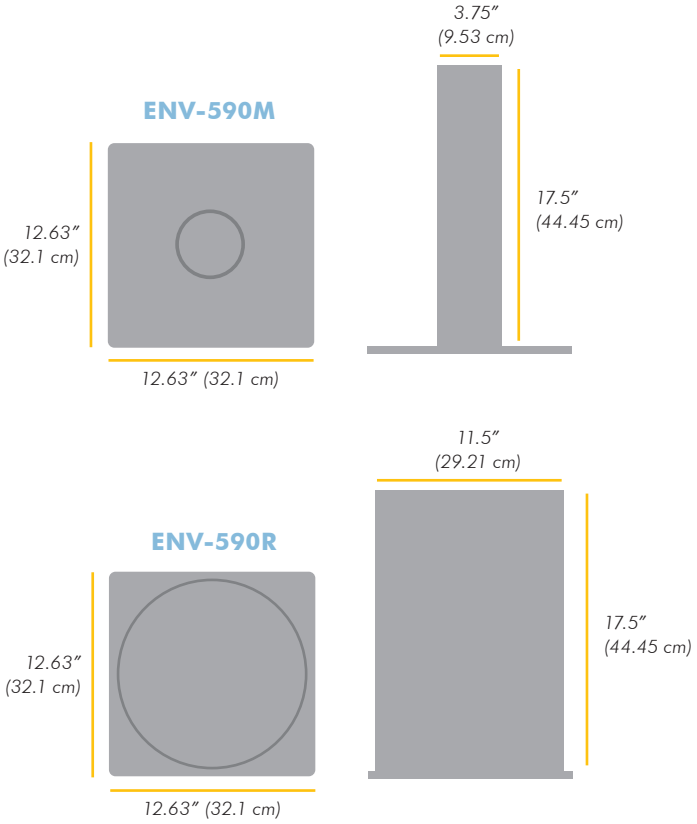
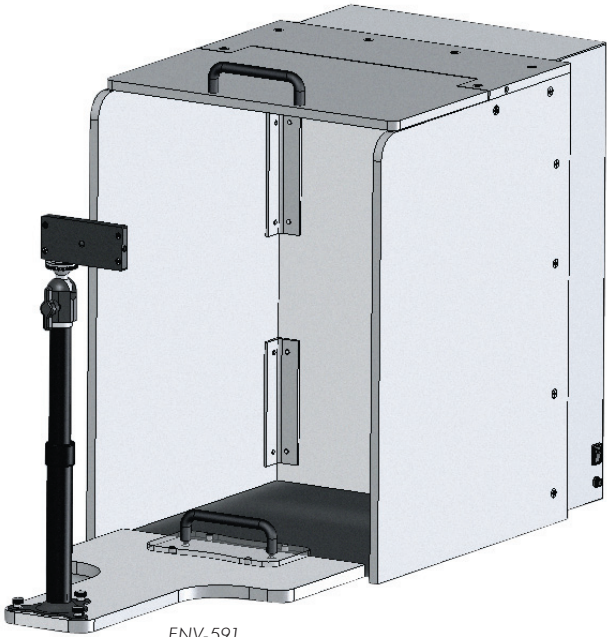
depressive symptoms. It was noted that antidepressants appeared to increase the latency to this immobile state, and that the time exhibiting immobile behaviors decreases while active behavior increases.

The immobility time is generally measured for a short time, e.g. 5 or 10 min, and can be measured by manual observation with a stopwatch or with a video analyzing software .

The video images are generally best handled as binary (monochrome) images so the rodent is detected as a silhouette. Our backlit chamber increases the contrast for easier analysis.

ENV-591

OVERALL (W×H×D)
13.5" x 18.38" x 14"
(34.29 x 46.67 x 35.56 cm)



FORCED SWIM TEST PACKAGE

MED-FSN MOUSE+RAT

- A white noise generator can be used to mask sudden loud noises that might startle the animals and affect their behavior within the tank
- LED backlighting increases contrast to silhouette the animal, resulting in a clearer image for the software to analyze its movement
- Typical behaviors:
 - Escape/struggle
 - Climb
 - Full/passive dive
 - Immobility/floating
 - Passive dive
 - Swimming

TEST CYLINDER

ENV-590M MOUSE
ENV-590R RAT

- Sturdy clear acrylic construction

CUBICLE

ENV-591 MOUSE+RAT

- Provides a frame for the light box to mount onto, and a camera mount
- Lid lifts for easy insertion/removal of the test cylinder

NOTE: Camera not included

PACKAGE CONTENTS					
A = MED-TLH-M			B = MED-TLH-R		
#	SKU	DESCRIPTION	A	B	
3	SAC-081515	Triadic Sound Attenuating Cubicle	A	B	
3	ENV-586B-S	Wheel Turn Chamber for Rat		B	
3	ENV-588B	Wheel Turn Chamber for Mouse	A		
1	DIG-716P1	SmartCtrl Package, 4 In/8 Out	A	B	
2	ENV-410C	Dual Range Constant Current Aversive Stimulator	A	B	
1	TDE-401	Tail Electrode Strip (pack of 50) for Rat	A	B	
1	TD-40	Electrode Gel 8 oz Tube	A	B	
1	SG-6080C	Small Tabletop Interface Cabinet	A	B	
8	SG-216A-10	3-Pin Mini-Molex Extension, 10' (3.04 m)	A	B	
3	SG-235PF-6	Power Cord Daisy Chain Cable, 6' (1.83 m)	A	B	
3	SG-586S	Shock Delivery Cable	A	B	



TRIADIC WHEEL TURN PACKAGE

MED-TLH-M **MOUSE**

This triadic design has been used for over 30 years to study the impact of stress controllability on a variety of behavioral as well as physiological indices (Current Protocols in Neuroscience, Feb 2001, Supplement 14).

Designed to run three animals at the same time. Subjects in the “escape” condition learn to turn the response wheel to terminate the aversive stimulus for themselves and a “yoked” partner. The “control” subject is not stimulated.

- Escape (controllable aversive stimulation)
- Yoked (uncontrollable aversive stimulation)
- Yoked Control (no aversive stimulation)

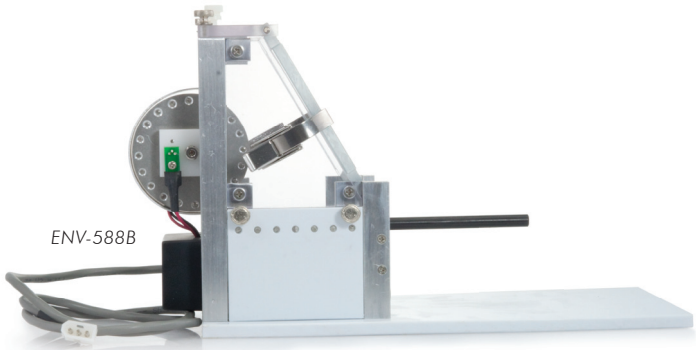
MED-TLH-R **RAT**

- Each of the three wheel turn chambers is housed in its own sound isolation cubicle for optimal acoustic, visual, and olfactory isolation between subjects
- Extending out the back of each chamber is a tail holder with curved aversive stimulation electrodes, and a soft velcro strap to hold the tail in place
- Chambers can be easily removed for cleaning

NOTE: Aversive stimulators, a Med-PC® interface package, and software must be ordered separately. The programming flexibility of Med-PC® software permits any programmed contingency across animals.

	BASE (LxWxH)	OVERALL (LxWxH)	RODS (OD)	SPACING	FLOOR (LxW)	ANIMAL SIZE
ENV-586B	9.125" x 3.625" x 0.25" (23.18 x 9.2 x 0.64 cm)	10" x 3.625" x 7.25" (25.4 x 9.2 x 18.24 cm)	0.187" (0.47 cm)	0.615" (1.56 cm)	6.14" x 2.96" (15.6 x 7.52 cm)	< 300 g
ENV-586C	9.125" x 4.9" x 0.5" (23.18 x 12.45 x 1.27 cm)	11.1" x 4.9" x 23.98" (28.19 x 12.45 x 14.53 cm)	0.187" (0.47 cm)	0.615" (1.56 cm)	7.2" x 4.5" (18.29 x 11.43 cm)	< 500 g
ENV-588B	9.125" x 3.625" x 0.25" (23.18 x 9.2 x 0.64 cm)	9.125" x 3.625" x 5.72" (23.18 x 9.21 x 14.53 cm)	0.122" (0.31 cm)	0.35" (0.89 cm)	2.5" x 2.35" (6.35 x 5.97 cm)	N/A

	EXTERIOR (WxHxD)
SAC-081515	9.5" x 16.5" x 17.25" (24.13 x 41.9 x 43.8 cm)



WHEEL TURN CHAMBER

ENV-586B **RAT** <300 G
ENV-586C **RAT** <500 G
ENV-588B **MOUSE**

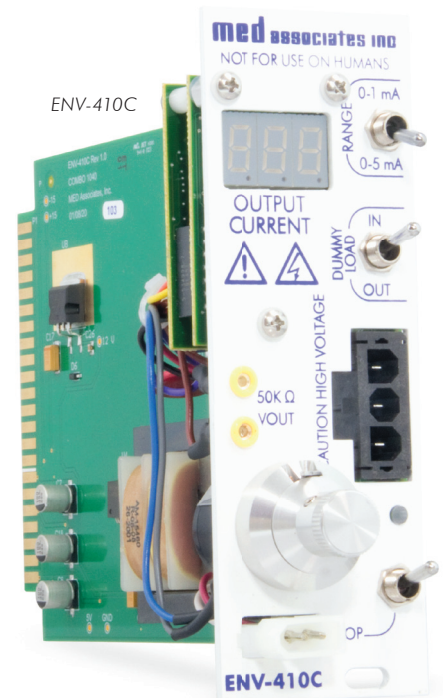
- Includes stainless steel grid floor & removable stainless steel waste pan
- The tail holder restrains the animal’s tail for aversive stimulus application
- Sloped back wall and ceiling constrain animal and helps them keep focus on the wheel, encouraging them to learn the wheel turn response
- Wheel uses a cam operated micro-switch to report a response for every 90 degrees of rotation providing audible and tactile feedback to the animal

SOUND ATTENUATING CUBICLE

SAC-081515 **MOUSE+RAT**

- Use with any of our wheel turn chambers
- Built-in 28V DC ventilation fan
- Stimulus light can be used as a conditioned stimulus or as a house light
- Viewing port enables unobtrusive observation of animal during testing
- Acoustical foam lining improves sound attenuating properties

NOTE: 28V power required for light and fan.



CONSTANT CURRENT AVERSIVE
STIMULATION MODULE DUAL RANGE

ENV-410C **MOUSE+RAT**

- Double-width panel, install in our interface cabinets (see power+control interface brochure)
- Provides a single shock output (e.g. vogel conflict)
 - For scrambled shock, use with the scrambler module (ENV-412C)
- Maintains constant current levels even if a connection to a grid rod is lost
- Continuous regulation at a lower voltage (250 Vrms, 440V max) eliminates the possibility of tissue damage due to arcing
- Current shown on a digital LED display and indicator
- Dummy load/subject switch
- Chain multiple modules in the same cabinet using a DB-15 cable (SG-219D)
- Adjust current using a two position range switch and adjustment knob

SPECIFICATIONS

Current Output = 0 - 1 or 0 - 5 mA
Current Resolution = 0.01 or 0.001 mA
Control Switching = Opto-isolator
Remote Operation = 28V DC
Shock Duration = 1 ms - 60 s



TD-40



TDE-401 (back)



TDE-401 (front)

ELECTRODE GEL 10% CHLORIDE

TD-40 **MOUSE+RAT**

- Highly conductive gel for improved conductivity between the animal's tail and electrodes
 - Eliminates poor quality signals from "some-what" conductive gels
- Recommended for short term recording
- 8 oz. tube

TAIL ELECTRODE STRIP

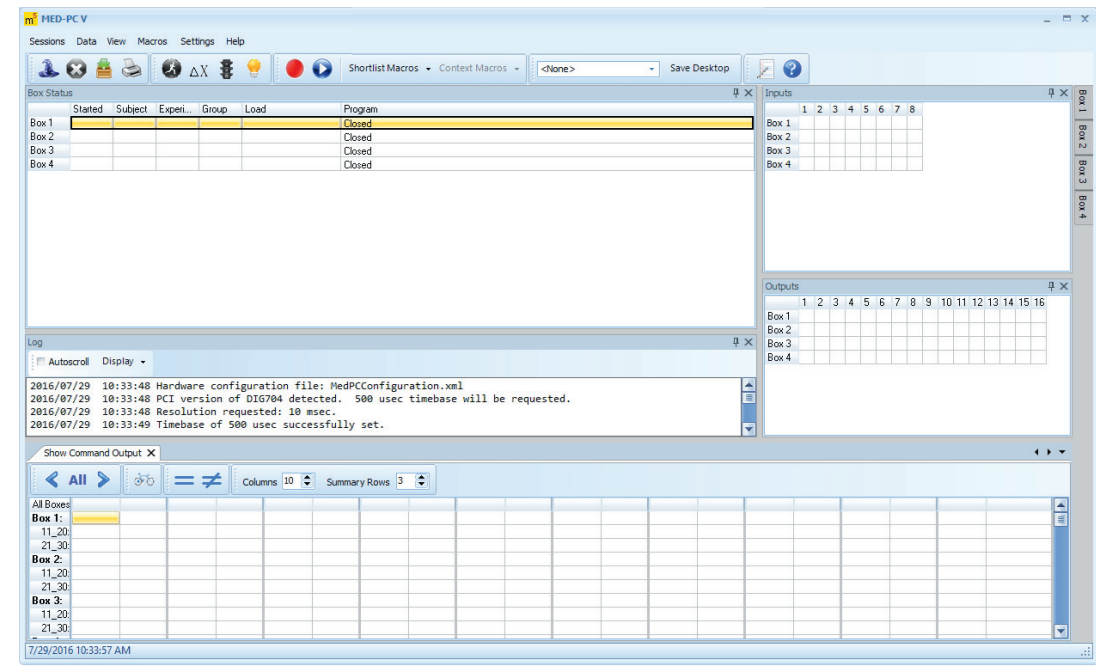
TDE-401 **RAT**

TDE-402 **MOUSE**

- Adhesive foam with embedded electrode wraps around tail like a bandage for easy application
- "Snap" style electrode for fast & easy connection
- Recessed "cup" around electrode for conductive gel
- Disposable strips eliminate the need for cleaning
- Sold in packs of 50

SPECIFICATIONS

Overall: 3.86" x 0.87" (9.8 x 2.2 cm)
Electrode Cup: 16 mm OD



TRIADIC LEARNED HELPLESSNESS PROTOCOL

SOF-700RA-12 **MOUSE+RAT**

- Designed to simultaneously run three animals in individual boxes
- Subjects in the escape condition learn to turn the response wheel to terminate the aversive stimulation for themselves and a yoked partner (control subject is not shocked)
- On load:
 - Left = escape
 - Center = yoked
 - Right = yoked control

NOTE: If your system has aversive stimulators in all three positions, the code may be modified to randomly select conditions

DEFAULT VARIABLES

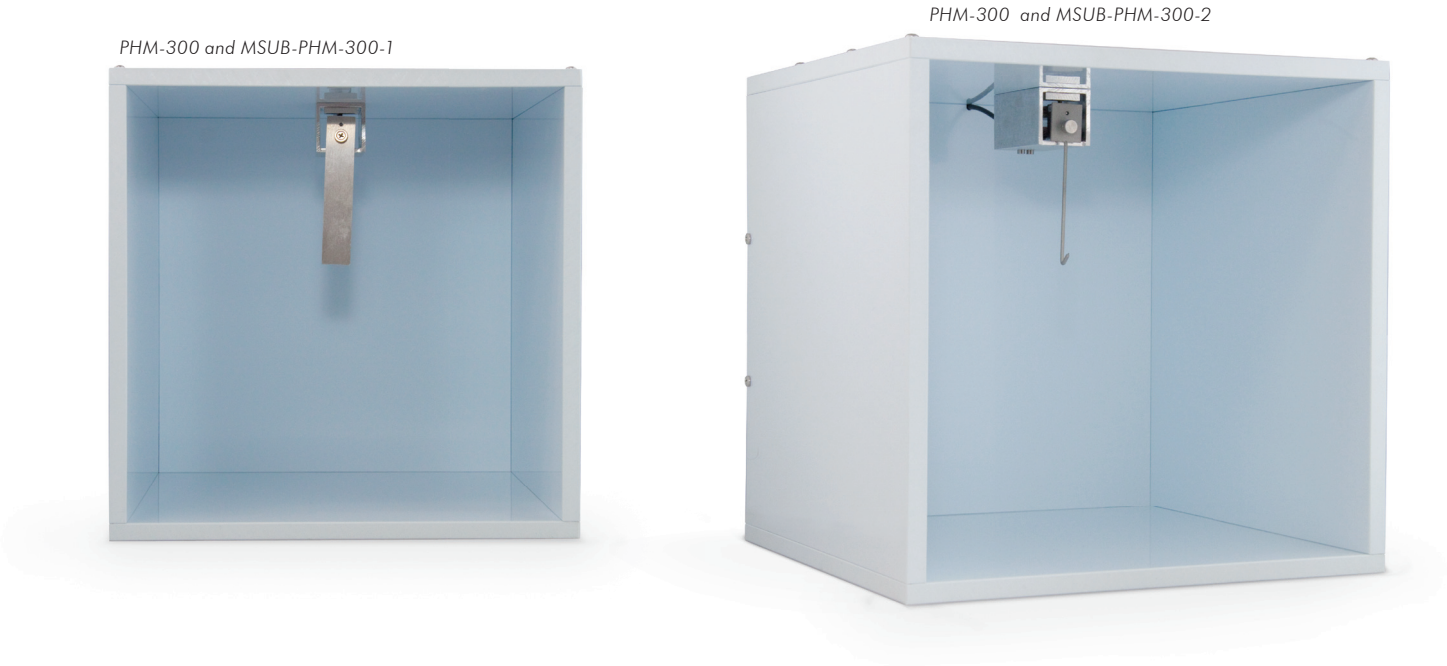
Trials to run = 100
Session time = 360 min
NOTE: session is closed if either condition is met
Maximum aversive stimulation time = 30 sec
Seven columns of data for each trial:

- Trial Number
- Left Response Counts
- Center Response Counts
- Right Response Counts
- Time to Meet FR
- FR Value
- ITI Value

PACKAGE CONTENTS				
A = MED-TSS-MS			B = MED-TSS-300	
#	SKU	DESCRIPTION	A	B
1	PHM-300	Test Cubicle	A	B
1	ENV-505TS	Load Cell Amplifier	A	B
1	DIG-729USB	USB High Speed Serial Microcontroller	A	
1	SG-6010	Rack Mount Interface Chassis	A	
1	SG-6500	Rack Mount Enclosure, Single	A	
1	DIG-735	Interface Card	A	B
1	DIG-735J	Junction Card	A	
1	DIG-744e	PCIe Data Acquisition Card	A	
1	SOF-821	Tail Suspension Software	A	
1	SG-219C-15	DB15 Control Cable, 15' (4.57 m)	A	
1	SG-219F1	Dual 4-Mol-Mini-Fit Cable, 15' (4.57 m)	A	B
1	SG-219TS	DB37 Cable, 10-Pin, M/F, 10' (3.04 m)	A	
1	SG-244A	DB68 to DB37 Adapter	A	

PHM-300

EXTERIOR (W×H×D)
13" x 13" x 12.5"
(33 x 33 x 31.75 cm)



TAIL SUSPENSION PACKAGE

MED-TSS-MS **MOUSE**

TAIL SUSPENSION ADD-ON PACKAGE

MED-TSS-300 **MOUSE**

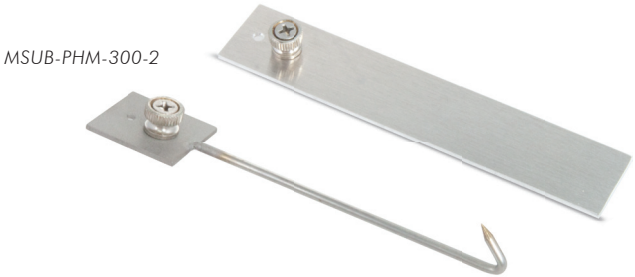
First reported in Psychopharmacology (1985(85): 367 - 370), the tail suspension test continues to be used for a range of antidepressant compounds including SSRI's, benzodiazepines, typical and atypical antipsychotics, etc.

The primary dependent measure is the time to relative immobility; therefore, the duration and vigor of activity is inferred to be an index of escape persistence.

To measure this activity, a precision linear load cell interfaces with the tail suspension software (SOF-821) which records the load cell output as both quantitative and graphic data.

- Package includes all hardware and software needed to set-up a single tail suspension station
- System can support up to seven add-on test stations (eight total)
- Packages include both a hook style catch and a suspension paddle for a choice of suspension method that works best for your experiment
- Mice are unable to touch the walls
- Add-on package (MED-TSS-300) includes everything needed to expand upon the starter package

MSUB-PHM-300-1



CUBICLE

PHM-300 **MOUSE**

Use of this cubicle prevents adjacent animals from seeing one another during a study session.

TAIL PADDLE

MSUB-PHM-300-1 **MOUSE**

- Stainless steel tail paddle
- Use to suspend a mouse by its tail with adhesive tape
- Attaches securely to load cell (ENV-505TS)

TAIL "CATCH" HOOK

MSUB-PHM-300-2 **MOUSE**

- Stainless steel tail hook
- Use to suspend a mouse by its tail with adhesive tape
- Attaches securely to load cell (ENV-505TS)

DIG-735



ENV-505TS



INTERFACE CARD

DIG-735 **MOUSE**

Provides signal conditioning from load cell amplifier to data acquisition software, filtering the load cell signal to meet user requirements.

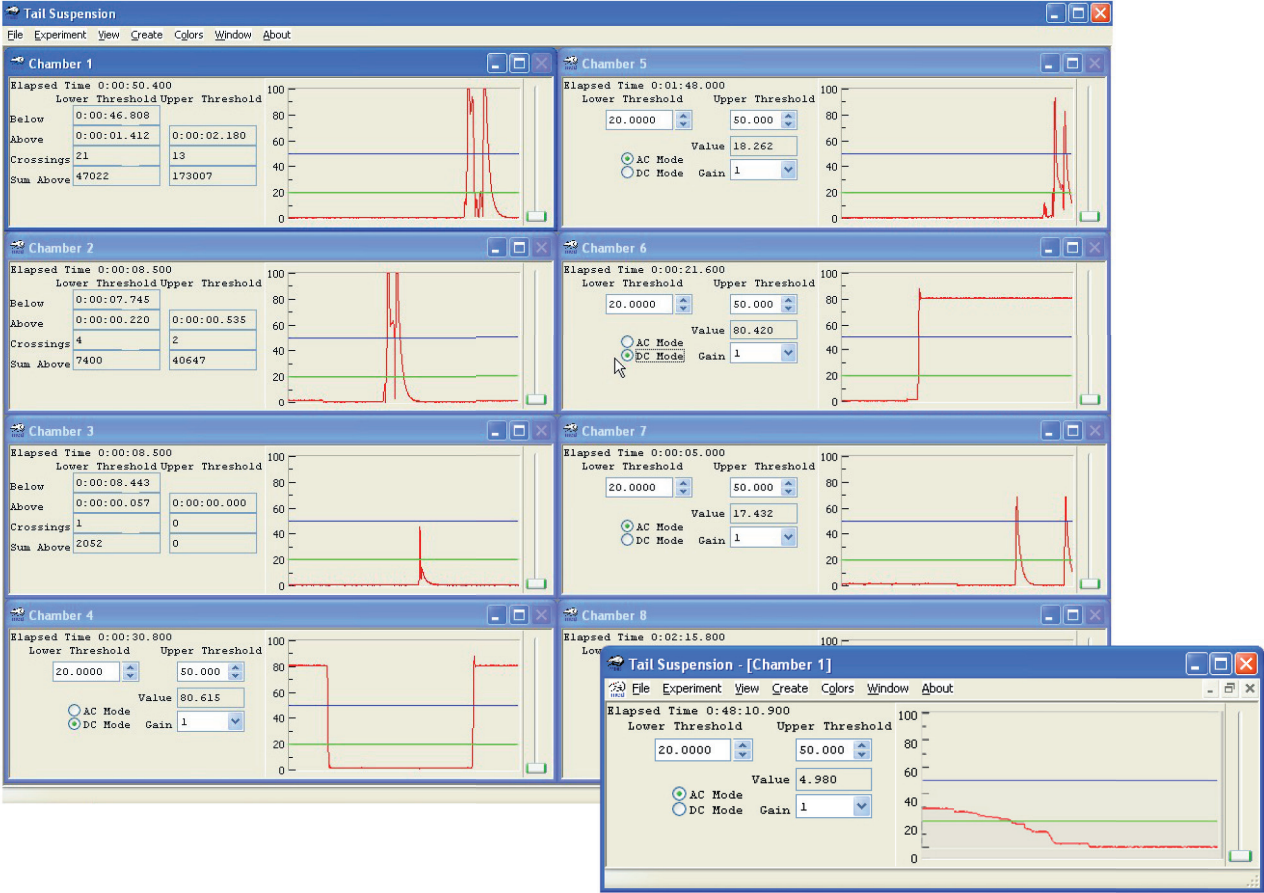
- Double-width panel, install in our interface cabinets
(see power+control interface brochure)
 - NOTE: One card needed per test station.

LOAD CELL + AMPLIFIER

ENV-505TS **MOUSE**

- Precision linear load cell includes amplifier
- Used to record animal movement
- Designed to work with our Tail Suspension Software (SOF-821)

SOF-821



TAIL SUSPENSION SOFTWARE

SOF-821 **MOUSE**

- Automatically append each animal's data to a separate file
 - Start trigger automatically begins data collection when the animal is attached to the load cell
 - Simultaneous recording of up to eight stations
 - Choose between:
 - DC mode: precise calibration
 - AC mode: eliminate drift while running animals
 - Set upper and lower threshold levels to distinguish between three distinct movement zones:
 - Immobile
 - Low activity
 - High activity
 - Generate ASCII text summary files containing:
 - Time above & below threshold
 - Number of crossings
 - Sum of activity above threshold
 - Export the raw analog data for analysis in Microsoft® Excel or other spreadsheet software
- COMPUTER REQUIREMENTS**
- Windows 7 or newer



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