med associates inc

Instrumentation and Software for Research

OPERANT CONDITIONING & GENERAL BEHAVIOR

PACKAGES

COMPONENTS

MED-008-B1

NOTE: Pictured with old feeder, now includes VeriFEED pellet dispenser

PACKAGE CONTENTS

A = MED-007-B1	C = MED-008-B1	F = MED-008-ST
B = MED-007-D1	D = MED-008-B2	
	E = MED-008-D1	

#	SKU	DESCRIPTION	A	B	C	D	E	F
1	ENV-018MD	Extra Tall MDF SAC	A			D		
1	ENV-018V	Extra Tall Expanded PVC SAC		B				
1	ENV-022MD	Standard MDF SAC			C			
1	ENV-022V	Standard PVC SAC					E	
1	ENV-005	Stainless Steel Grid Floor, Level *for Rat*	A	B	C	D	E	F
1	ENV-215M-LED	House Light	A	B	C	D	E	F
2	ENV-221M-LED	Stimulus Light	A	B	C	D	E	F
1	ENV-007	Extra Tall Modular Test Chamber *for Rat or Mouse*	A	B				
1	ENV-008	Standard Modular Test Chamber *for Rat*					E	
1	ENV-008-VP	Standard Modular Test Chamber w/Valu-pak Top *for Rat*			C	D		F
1	ENV-200R2M	Trough Pellet Receptacle *for Rat*	A		C	D		
1	ENV-202M-S	Switchable Liquid Dipper *for Rat*						F
1	ENV-202RM-S	Liquid Dipper with Dual Pellet/Dipper *for Rat*		B			E	
1	ENV-204	VeriFEED Pellet Dispenser	A	B	C	D	E	
2	ENV-110M	Fixed Lever *for Rat*	A		C			F
2	ENV-112CM	Retractable Lever *for Rat*		B		D	E	
1	ENV-223AM	Sonalert Module w/Volume Control		B			E	
1	DIG-706	Standalone USB Interface						F
1	DIG-716P1	SmartCtrl Package (4 In/8 Out)	A		C	D		
1	DIG-716P2	SmartCtrl Package (8 In/16 Out)		B			E	F
1	SG-716B	SmartCtrl Connection Panel (8 in/16 Out)						F
1	SG-210CB	DB25 SmartCtrl Cable, M/F , 25' *(7.6m)*						F
1	SOF-700LA-2	Operant Conditioning Lab Utility Package						F
1	SOF-706-1	Schedule Manager *(single chamber license)*						F
1	SOF-721-ST	SoftCr Cumulative Recorder *(single chamber license)*						F

BEHAVIORAL TEST PACKAGES FOR RAT

MED-007-B1 `RAT` `STANDARD` `EXTRA TALL` `FIXED LEVER`

MED-007-D1 `RAT` `STANDARD` `EXTRA TALL` `RETRACT. LEVER`

MED-008-B1 `RAT` `STANDARD` `FIXED LEVER`

MED-008-B2 `RAT` `STANDARD` `NOSE POKE`

MED-008-D1 `RAT` `STANDARD` `RETRACT. LEVER`

The packages shown are just a few of the available configurations for operant testing. Our sales team can help you build custom chamber configurations using any of these designs as your guide to meet virtually any research requirement.

• Built to meet the needs of researchers preforming basic operant behavior studies on a budget

• Basic packages (-B1/-B2) have a fixed lever and a trough pellet feeder

• Deluxe packages (-D1) have a retractable lever and a trough, pellet feeder, and liquid dipper

NOTE: To run multiple modular chambers, order the MED-SYST-8-USB interface and software package to run up to eight or the MED-SYST-16-USB to run up to sixteen.

STUDENT LAB TRAINER PACKAGE

MED-008-ST `RAT` `STANDARD`

• Configured for teaching experimental analysis of behavior in a student lab setting

• The included Schedule Manager™ software's uncomplicated programming interface make this system excellent for novice users

• A student can connect the USB interface directly to their own laptop computer! *(or pair of students in group labs)*

SUMMARY OF CONTENTS

Standalone USB Interface: Eight (8) inputs, Sixteen (16) outputs, connection panel, power supply, cables

Modular Chamber: Left & right response levers, left & right stimulus lights, house light, liquid dipper reinforcement *(pellet dispenser also available)*

Software: Operant Lab Utility Package with preset schedules *(FR, FI, VR, VI, RR, RI, DISC, and CHAIN)*, Schedule Manager, and SoftCr™ Cumulative Record Graphical Software

   ° *NOTE: See our Software brochure for more info*

PACKAGE CONTENTS

A = MED-307A-B1
B = MED-307A-B2
C = MED-307A-D1
D = MED-307W-B1
E = MED-307W-B2
F = MED-307W-D1
G = MED-307W-D2

#	SKU	DESCRIPTION	A	B	C	D	E	F	G
1	ENV-022MD	Standard MDF SAC	A	B		D	E		
1	ENV-022V	Standard PVC SAC			C			F	G
1	ENV-307A	Modular Test Chamber *(Classic)* for Mouse	A	B	C				
1	ENV-307W	Modular Test Chamber *(Wide)* for Mouse					E	F	G
1	ENV-307A-GFW	Stainless Steel Grid Floor *(Classic)* for Mouse	A	B	C				
1	ENV-307W-GFW	Stainless Steel Grid Floor *(Wide)* for Mouse				D	E	F	G
1	ENV-315M-LED	House Light *(Classic)* for Mouse	A	B	C	D	E		
1	ENV-315W-LED	House Light *(Wide)* for Mouse					E	F	G
2	ENV-321M-LED	Stimulus Light *(Classic)* for Mouse	A						
2	ENV-321W-LED	Stimulus Light *(Wide)* for Mouse				D		F	
1	ENV-204	VeriFEED Pellet Dispenser	A	B	C	D	E	F	G
1	ENV-302RM-S	Switchable Liquid Dipper w/Dual Pellet Receptacle *for Mouse*			C				
1	ENV-302RW-S	Switchable Liquid Dipper w/Dual Pellet Receptacle *for Mouse*						F	G
1	ENV-303M	Trough Pellet Receptacle *(Classic)* for Mouse	A	B					
1	ENV-303W	Trough Pellet Receptacle *(Wide)* for Mouse				D	E		
2	ENV-310M	Ultra Sensitive Lever *(Classic)* for Mouse	A						
2	ENV-310W	Ultra Sensitive Lever *(Wide)* for Mouse				D			
2	ENV-312-3M	Retractable Ultra Sensitive Lever *(Classic)* for Mouse			C				
2	ENV-312-3W	Retractable Ultra-Sensitive Lever *(Wide)* for Mouse						F	
2	ENV-313M	Illuminated Nose Poke Response *(Classic)* for Mouse		B					
2	ENV-313W	Illuminated Nose Poke Response *(Wide)* for Mouse							G
1	ENV-323AM	Sonalert Module w/Volume Control *(Classic)* for Mouse			C				
1	ENV-323AW	Sonalert Module w/Volume Control *(Wide)* for Mouse						F	G
1	DIG-716P1	SmartCtrl Package (4 In/8 Out)	A	B		D	E		
1	DIG-716P2	SmartCtrl Package (8 In/16 Out)			C			F	G

ENV-307W-B2

NOTE: Pictured with old feeder, now includes VeriFEED pellet dispenser

BEHAVIORAL TEST PACKAGES FOR MOUSE

MED-307A-B1 `MOUSE` `CLASSIC` `FIXED LEVER`
MED-307A-B2 `MOUSE` `CLASSIC` `NOSE POKE`
MED-307A-D1 `MOUSE` `CLASSIC` `RETRACT. LEVER`
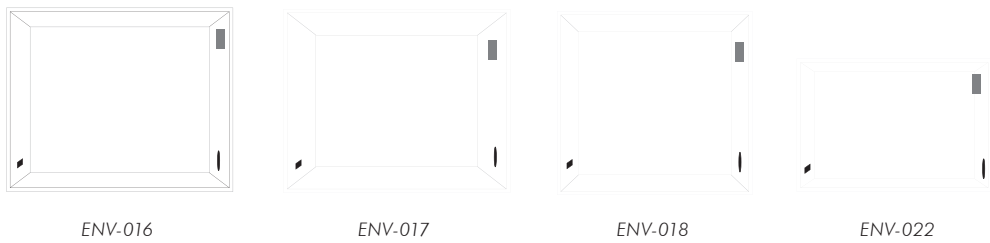
MED-307W-B1 `MOUSE` `WIDE` `FIXED LEVER`
MED-307W-B2 `MOUSE` `WIDE` `NOSE POKE`
MED-307W-D1 `MOUSE` `WIDE` `RETRACT. LEVER`

The packages shown are just a few of the available configurations for operant testing. Our sales team can help you build custom chamber configurations using any of these designs as your guide to meet virtually any research requirement.
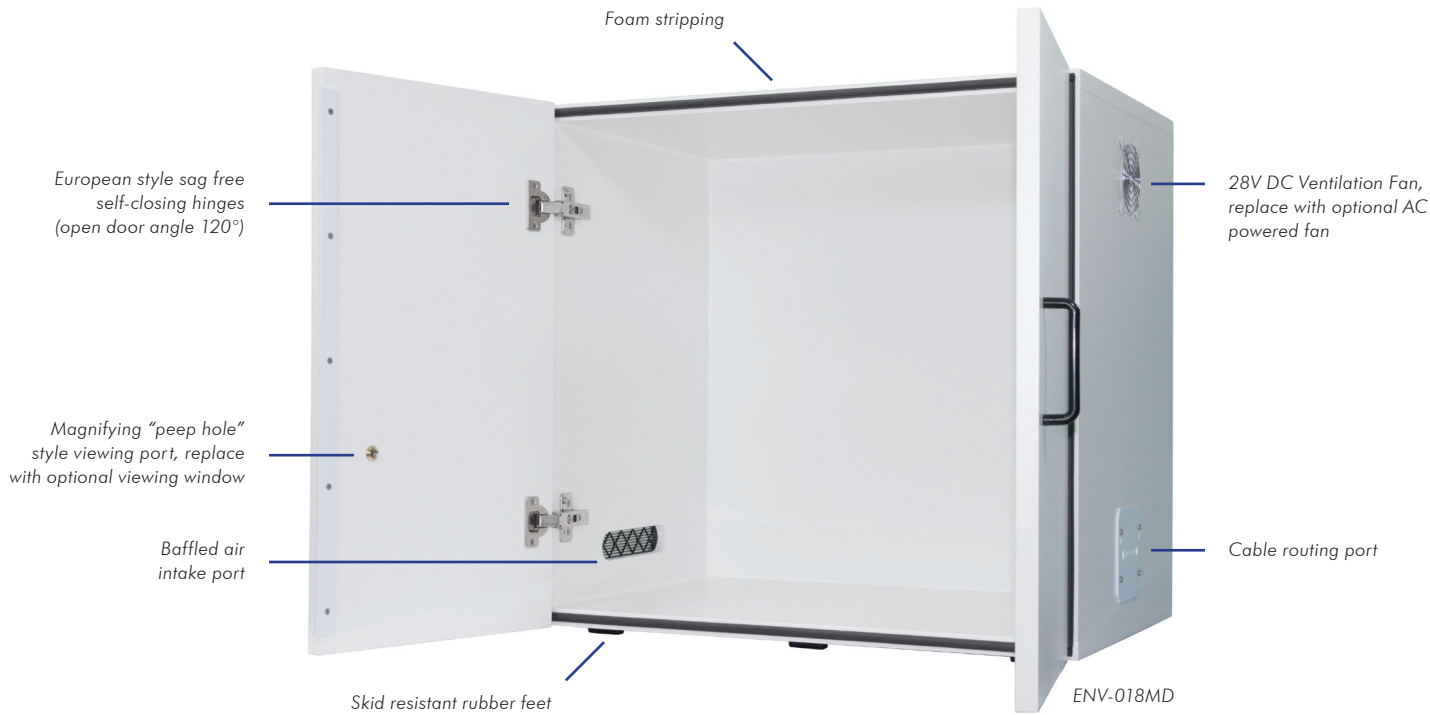
• Built to meet the needs of researchers preforming basic operant behavior studies on a budget

• Basic packages (-B1/-B2) have a fixed lever and a trough pellet feeder

• Deluxe packages (-D1) have a retractable lever and a trough, pellet feeder, and liquid dipper

NOTE: To run multiple modular chambers, order the MED-SYST-8-USB interface and software package to run up to eight or the MED-SYST-16-USB to run up to sixteen.

ENV-016   ENV-017   ENV-018   ENV-022

STANDARD FEATURES:

Foam stripping

European style sag free
self-closing hinges
(open door angle 120°)

28V DC Ventilation Fan,
replace with optional AC
powered fan

Magnifying "peep hole"
style viewing port, replace
with optional viewing window

Baffled air
intake port

Cable routing port

Skid resistant rubber feet

ENV-018MD

	INTERIOR (W×H×D)	EXTERIOR (W×H×D)	SMALL WINDOW (W×H)	LARGE WINDOW (W×H)
ENV-016MD	25.81" x 21.88" x 15.94" (65.56 x 55.58 x 40.49 cm)	29.94" x 24" x 19" (76.05 x 60.96 x 48.26 cm)	7.5" x 8" (19.05 x 20.32 cm)	9" x 14.4" (22.86 x 36.58 cm)
ENV-017M/-017S/-017SA	25.81" x 21.88" x 21.94" (65.56 x 55.58 x 55.73 cm)	29.94" x 24" x 25" (108.92 x 60.96 x 63.5 cm)	7.5" x 8" (19.05 x 20.32 cm)	9" x 14.4" (22.86 x 36.58 cm)
ENV-018MD/-018SD	21.81" x 21.88" x 15.94" (65.56 x 55.58 x 40.49 cm)	25.94" x 24" x 19" (65.89 x 60.96 x 48.26 cm)	7.5" x 8" (19.05 x 20.32 cm)	21.43" x 20.3" (54.43 x 51.56 cm)
ENV-022MD/-022MW/-022SA/-022SD	21.81" x 14.88" x 15.94" (65.56 x 37.8 x 40.49 cm)	25.94" x 17" x 19" (65.89 x 43.18 x 48.26 cm)	7.5" x 8" (19.05 x 20.32 cm)	21.43" x 13.3" (54.43 x 33.78 cm)

MDF = MEDIUM DENSITY FIBERBOARD + LAMINATE COATING

Constructed from MDF, a high density wood composite with thermally fused white laminate inside and out.

EXTRA WIDE MDF SOUND ATTENUATING CUBICLE

ENV-016MD   UN-LINED
ENV-016MD-27   PULL-OUT SHELF
ENV-016MD-W   SM WINDOW
ENV-016MD-WF   LG WINDOW

Extra width accommodates our full range of modular components on the test chamber without interfering with SAC door operation.

EXTRA TALL MDF SOUND ATTENUATING CUBICLE

ENV-018MD   UN-LINED
ENV-018MD-27   PULL-OUT SHELF
ENV-018MD-W   SM WINDOW
ENV-018MD-WF   LG WINDOW
ENV-018MD-WF27   LG WINDOW   PULL-OUT SHELF
ENV-018SD   FOAM LINED
ENV-018SD-27   PULL-OUT SHELF   FOAM LINED
ENV-018SD-WF   FOAM LINED   LG WINDOW

Additional height accommodates standard chambers with overhead accessories, such as self administration or optogenetics.

EXTRA LARGE MDF SOUND ATTENUATING CUBICLE

ENV-017M   UN-LINED
ENV-017M-27   PULL-OUT SHELF
ENV-017M-W   SM WINDOW
ENV-017M-WF   LG WINDOW
ENV-017S   FOAM LINED
ENV-017SA   FOAM LINED
ENV-017SA-27   PULL-OUT SHELF

Our deepest and widest cubicle, best suited for use with our largest rodent chambers and modular components.
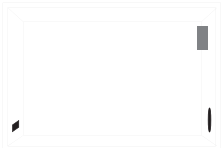
STANDARD MDF SOUND ATTENUATING CUBICLE

ENV-022MD   UN-LINED
ENV-022MD-25F   LG WINDOW
ENV-022MD-27   PULL-OUT SHELF
ENV-022MD-W   SM WINDOW
ENV-022MD-WF   LG WINDOW
ENV-022MW   SM WINDOW
ENV-022SA   LG WINDOW   FOAM LINED
ENV-022SD   SM WINDOW   FOAM LINED
ENV-022SD-WF   LG WINDOW   FOAM LINED

Standard size is suitable for most applications and most modular components.

	INTERIOR (W×H×D)	EXTERIOR (W×H×D)	SMALL WINDOW (W×H)
ENV-018V	21.81" x 21.88" x 13.94" *(55.4 x 55.57 x 35.41 cm)*	25.94" x 24" x 17" *(65.89 x 60.96 x 43.18 cm)*	7.5" x 8" *(19.05 x 20.32 cm)*
ENV-022V	21.81" x 14.88" x 13.94" *(55.4 x 37.8 x 35.41 cm)*	25.94" x 17" x 17" *(65.89 x 43.18 x 43.18 cm)*	7.5" x 8" *(19.05 x 20.32 cm)*
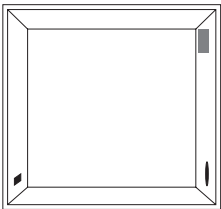
ENV-022V

ENV-018V

ENV-022V

PVC = SINTRA® EXPANDED FOAM POLYVINYL CHLORIDE

- Lighter weight than MDF cubicles
- All seams are sealed
- Easy to clean, resistant to staining, moisture, and many chemicals
- Equal sound attenuation performance to MDF

STANDARD PVC SOUND ATTENUATING CUBICLE

ENV-022V UN-LINED
ENV-022V-W SM WINDOW

Standard size is suitable for most applications and most modular components.

EXTRA TALL PVC SOUND ATTENUATING CUBICLE

ENV-018V UN-LINED
ENV-018V-W SM WINDOW

Additional height accommodates standard chambers with overhead accessories, such as self administration or optogenetics.

EARTH GROUND JUNCTION BOX

SG-220

- Grounds our electronically shielded sound attenuation cubicles using a standard power cable and wall outlet
- Provides eight (8) BNC ports that are continuous with earth ground
  - *NOTE: Do not connect signal outputs or inputs from regular instruments to this junction box using BNC cables*
- An additional unit (power supply, computer chassis, etc.) can be plugged into the junction box using the three-pronged plug receptacle

ENV-025F

VENTILATION FAN

ENV-025F28 DC POWER

- Supplied standard with all SACs
- Requires very little current from the control power supply (140 mA)
- Moves up to 46 cfm of air
- Produces background noise reaching 75 dB

AC POWER ADAPTER FOR SAC FAN

SG-216B6 AC POWER

Plug the DC powered SAC fan into an AC outlet.
- 2-pin Male Molex to 2.5mm 28V DC jack
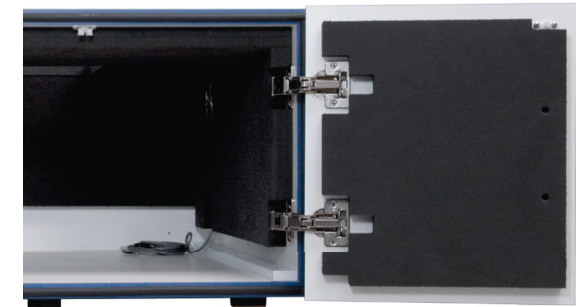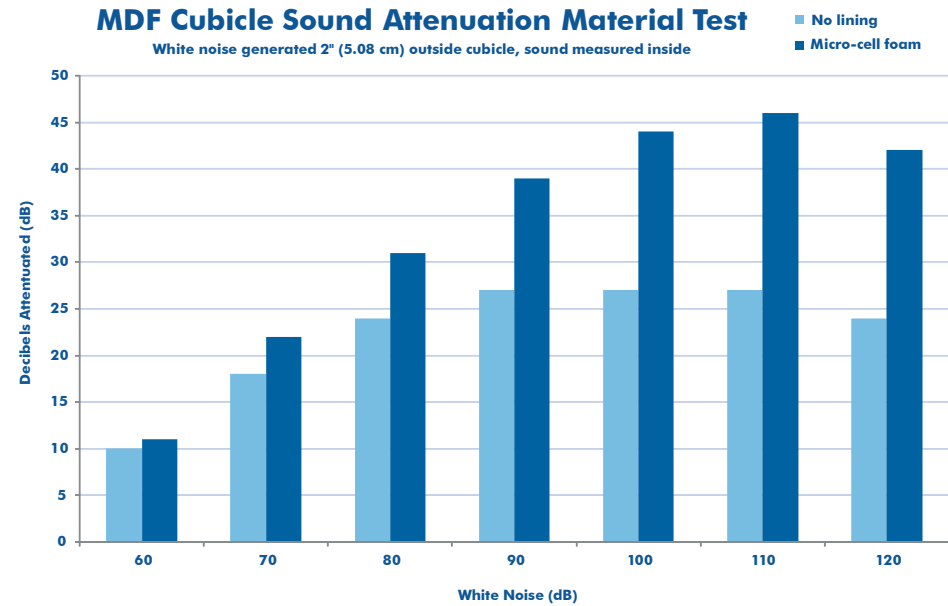- 0.89A/28V DC power supply

SAC-001

STACKING BLOCK KIT

SAC-001

Stack two SACs on each other with space between for hardware and wiring.

Lift Height *(H)* = 3"

Footprint *(LxW)* = 3" x 0.75"

MDF Cubicle Sound Attenuation Material Test

White noise generated 2" (5.08 cm) outside cubicle, sound measured inside

■ No lining
■ Micro-cell foam

ACOUSTICAL FOAM

Add a layer of 1" thick micro-cell foam (crosslink polyethylene) to the inside of the cubicle and doors.

- Increases sound attenuation performance and reduces reverberation
- Refer to the above chart that compares the performance of a lined and un-lined SAC
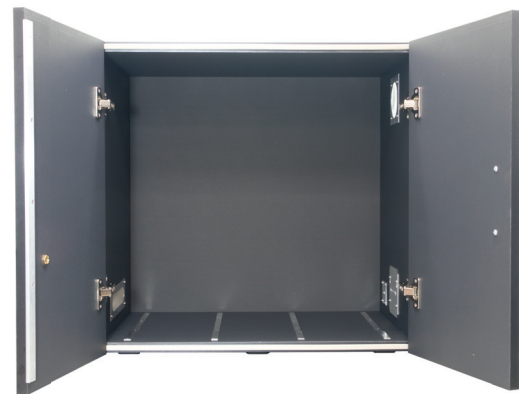
ELECTRONIC SHIELDING

Electrically continuous layer of conductive carbon paint applied to all interior surfaces.

- Attenuation of ~44dB from 30MHz – 18GHz
- An exterior BNC port for connecting to an available earth ground in your lab, effectively turning the cubicle into a Faraday cage *(see SG-220)*
- Ideal for experiments combining electrophysiology with behavioral techniques

VIEWING WINDOW

Replace the standard peephole in an MDF cubicle with a single pane polycarbonate window.

- Available in small *(shown above)*, large, and full sizes
  - Full windows replace the standard double door with a single door, and is ideal for applications such as group viewing or video taping
- While any window will sacrifice some attenuation in front of the cubicle, it has little effect on neighboring cubicles

NOTE: Not recommended for expanded PVC cubicles.

OVERHEAD CAMERA MOUNT

Pre-drilled holes for installing a Universal Camera Mount *(ENV-598)*.
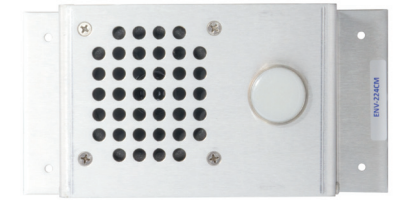
SPEAKER + LIGHT

Mount a speaker *(ENV-224AM-3)* and stimulus light *(ENV-221M-LED)* anywhere inside the SAC. Typically positioned directly above the chamber.

*NOTE: See the Audio section for more info.*

PULL-OUT SHELF

Mount a 0.75" *(1.9 cm)* thick MDF shelf inside the cubicle on drawer slides. Makes the changing out of chambers easier than ever!

NOTE: It is recommended that the back of the cubicle be anchored down for increased stability when sliding the drawer out.

inside

VIDEO DOOR

Mount a camera into the door so it doesn't take up space inside the cubicle.

ENV-307W

ENV-007   ENV-008   ENV-009   ENV-009A   ENV-307A   ENV-307W
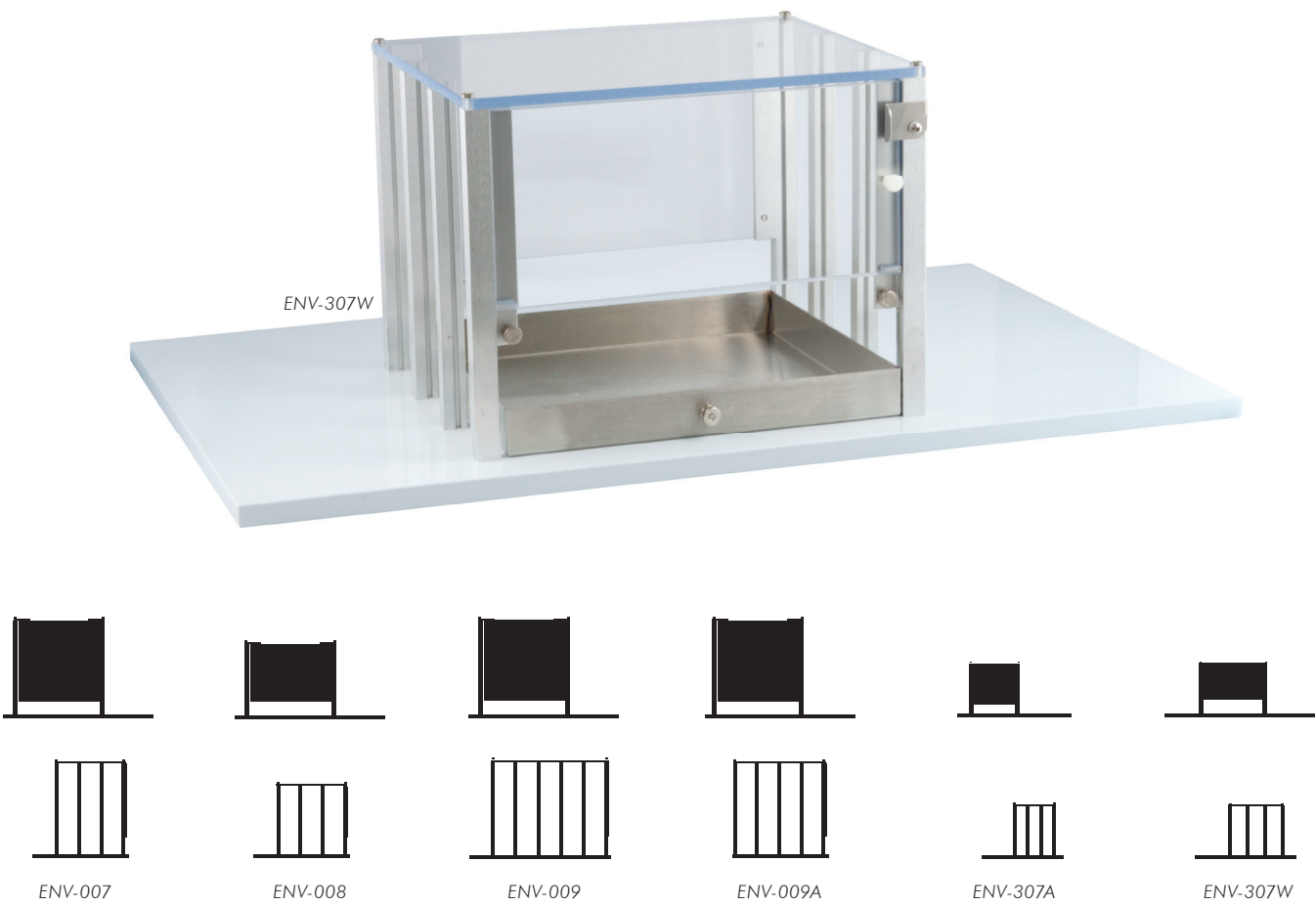
	BASE (L×W×H)	WORKING AREA (L×W×H)	CHANNELS	FITS IN SAC
ENV-007 ENV-007-VP	21" x 13.75" x 0.5" (53.34 x 34.93 x 1.27 cm)	11.63" x 9.25" x 10.75" (53.34 x 34.93 x 27.31 cm)	6 (3 per wall)	ENV-018MD / -018V ENV-022MD / -022V
ENV-008 ENV-008-VP	21" x 13.75" x 0.5" (53.34 x 34.93 x 1.27 cm)	11.63" x 9.78" x 7.35" (53.34 x 24.84 x 18.67 cm)	6 (3 per wall)	ENV-018MD / -018V ENV-022MD / -022V
ENV-009	21" x 20" x 0.5" (53.34 x 50.8 x 1.27 cm)	11.63" x 15.68" x 10.75" (29.53 x 39.81 x 27.31 cm)	10 (5 per wall)	ENV-017M
ENV-009A	21" x 13.75" x 0.5" (53.34 x 34.93 x 1.27 cm)	11.63" x 12.46" x 10.75" (29.53 x 31.65 x 27.31 cm)	8 (4 per wall)	ENV-016MD
ENV-307A	16" x 11.5" x 0.5" (40.64 x 29.21 x 1.27 cm)	6" x 5.25" x 5" (15.24 x 13.34 x 12.7 cm)	6 (3 per wall)	ENV-022MD / -022V
ENV-307W	21" x 13.75" x 0.5" (53.34 x 34.93 x 1.27 cm)	8.5" x 7.12" x 5" (21.59 x 18.08 x 12.7 cm)	6 (3 per wall)	ENV-022MD / -022V

FEATURES:

- Each modular test chamber includes a stainless steel waste pan *(grid floors sold separately, see pages 16-17)*
- White polyproplyne base, clear polycarbonate door and rear panel
- Rat models have a flap top with a clear polycarbonate center and two hinged stainless steel flaps secured with thumbscrews, which makes changing modules quick and easy
- Valu-Pak Tops *(-VP models)* are a lower cost alternative that replaces the flap-top with a solid clear polycarbonate pane screwed in place
  - To replace modular components, top must be unscrewed and removed
  - Ideal for applications that do not require frequent changing of accessories
  - Perfect for recording video from above
- Sturdy aluminum channels securely hold any modular component
- Modified tops (-CT) have a slot for optometric or drug delivery tethers

STANDARD MODULAR CHAMBER FOR MOUSE

ENV-307A	MOUSE	CLASSIC	VALU-PAK TOP
ENV-307A-CT	MOUSE	CLASSIC	MODIFIED TOP
ENV-307W	MOUSE	WIDE	VALU-PAK TOP
ENV-307W-CT	MOUSE	WIDE	MODIFIED TOP

Standard height chamber recommended for most rodent work.

- Designed to reduce distractions for the mouse to improve shaping and performance
- Front loading door that folds down, leaving an extra high lip to contain the animal until removed

STANDARD MODULAR CHAMBER FOR RAT

ENV-008	RAT	STANDARD	FLAP TOP
ENV-008CT	RAT	STANDARD	MODIFIED TOP
ENV-008-VP	RAT	STANDARD	VALU-PAK TOP

Standard height chamber recommended for most rodent work.

- Fits into less expensive SACs and takes up less shelf space than the Extra Tall Modular Chamber *(ENV-007)*

CHAMBER COMPONENT PAIRING

CHAMBER	GRID FLOOR	WASTE PAN
ENV-007 / -008	ENV-005	ENV-007A3
ENV-009	ENV-009-GF	FAB-ENV-009-04
ENV-009A	ENV-009A-GF	FAB-ENV-009-04C
ENV-307A	ENV-307A-GFW	ENV-307-07
ENV-307W	ENV-307W-GFW	ENV-307W-05

FOUR CHANNEL MODULAR CHAMBER FOR MOUSE + RAT

| ENV-009A | MOUSE+RAT | FLAP TOP |
| ENV-009A-CT | MOUSE+RAT | MODIFIED TOP |

Ideal for special applications with multiple response levers and/or dispensers, or just for additional space for the animal.

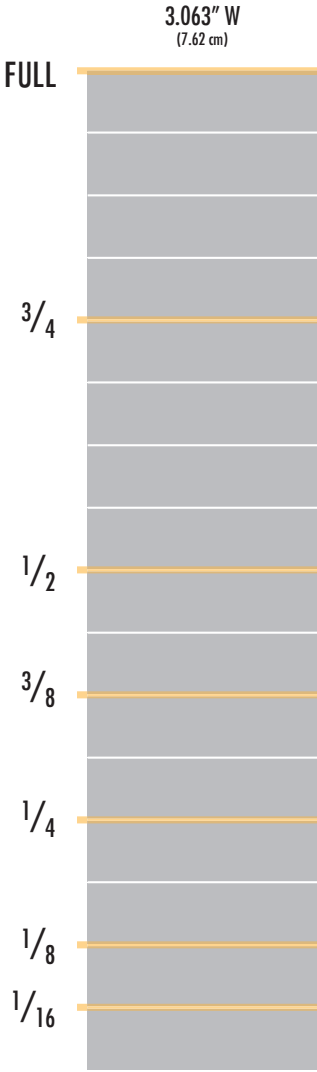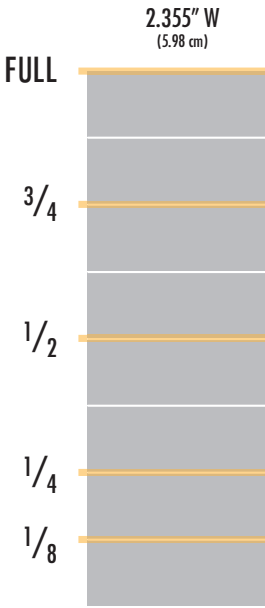### FIVE CHANNEL MODULAR CHAMBER FOR MOUSE + RAT

| ENV-009 | MOUSE+RAT | FLAP TOP |
| ENV-009CT | MOUSE+RAT | MODIFIED TOP |

Ideal for special applications with multiple response levers and/or dispensers, or just for additional space for the animal.

EXTRA TALL MODULAR CHAMBER FOR MOUSE + RAT

ENV-007	MOUSE+RAT	FLAP TOP
ENV-007CT	MOUSE+RAT	MODIFIED TOP
ENV-007-VP	MOUSE+RAT	VALU-PAK TOP

Versatile size can accommodate pigeons, rodents, or unrestrained small primates.

3.063" W
(7.62 cm)

FULL

3/4

1/2

3/8

1/4

1/8

1/16

ENV-007-FP
ENV-008-FP
ENV-009-FP

(fits ENV-007 / -008 / -009)

2.355" W
(5.98 cm)

FULL

3/4

1/2

1/4

1/8

ENV-307W-FP

(fits ENV-307W)

1.725" W
(4.32 cm)

FULL

3/4

1/2

1/4

1/8
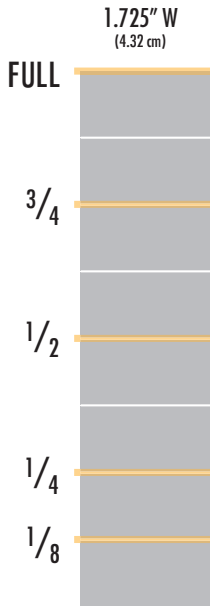
ENV-307A-FP

(fits ENV-307A)

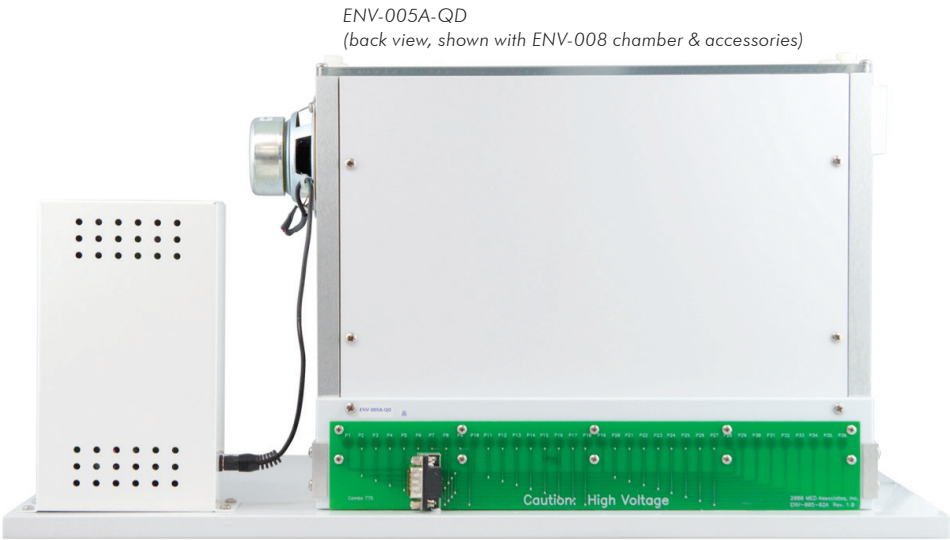*Example ENV-307W-CT chamber shown with various modular components, and filler panels highlighted*

FILLER PANEL PACKAGE

ENV-007-FP	MOUSE+RAT	STANDARD
ENV-008-FP	MOUSE+RAT	STANDARD
ENV-009-FP	MOUSE+RAT	STANDARD
ENV-307A-FP	MOUSE	CLASSIC
ENV-307W-FP	MOUSE	WIDE

Assorted aluminum panels in various sizes to fill modular channels where components are either not used, or to adjust their vertical position.

• Mouse walls are split up into 8 units, and 16 for rat
(see chart for visual breakdown)

NOTE: With the purchase of chamber and accessories appropriate size filler panels are supplied at no cost.

ENV-005A-QD
(back view, shown with ENV-008 chamber & accessories)

ENV-005   *ENV-005A*   *ENV-009-GF*   *ENV-009A-GF*

ENV-307A-GFW   *ENV-307W-GFW*   *ENV-005FPU-M*   *ENV-005FPU-R*
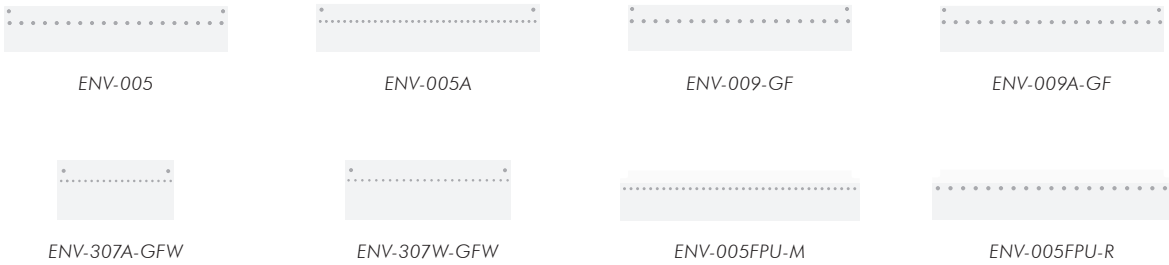
	RODS	ROD SIZE (OD)	ROD SPACING	FITS CHAMBER	QUICK DISCONNECT HARNESS	WASTE PAN
ENV-005	19	0.187" (0.47 cm)	0.62" (1.57 cm)	ENV-007 / -008	ENV-005-QD	ENV-007A3
ENV-005A	36	0.125" (0.32 cm)	0.32" (0.81 cm)	ENV-007 / -008	ENV-005A-QD	ENV-007A3
ENV-005FPU-M	36	0.125" (0.32 cm)	0.31" (0.79 cm)	ENV-007 / -008	N/A	N/A
ENV-005FPU-R	19	0.19" (0.47 cm)	0.625" (1.59 cm)	ENV-007 / -008	N/A	N/A
ENV-009-GF	19	0.187" (0.47 cm)	0.62" (1.57 cm)	ENV-009	N/A	FAB-ENV-009-04
ENV-009A-GF	19	0.187" (0.47 cm)	0.62" (1.57 cm)	ENV-009A	N/A	FAB-ENV-009-04C
ENV-307A-GFW	19	0.125" (0.32 cm)	0.31" (0.79 cm)	ENV-307A	ENV-307A-QD	ENV-307-07
ENV-307W-GFW	24	0.125" (0.32 cm)	0.35" (0.89 cm)	ENV-307W	ENV-307W-QD	ENV-307W-07

ENV-009 chamber with ENV-009-GF grid floor

ENV-005FPU-R

GRID FLOOR

ENV-005 `RAT` `STANDARD`
ENV-005A `MOUSE` `STANDARD`
ENV-009-GF `RAT` `STANDARD`
ENV-009A-GF `MOUSE+RAT` `STANDARD`
ENV-307A-GFW `MOUSE` `CLASSIC`
ENV-307W-GFW `MOUSE` `WIDE`

Stainless steel grid rods mounted in white polypropylene supports.

- Floor is easily removed via two thumbscrews for cleaning
  - Stainless steel waste pan is autoclavable
- Add the quick disconnect harness for aversive stimulation and/or contact lickometer applications

QUICK CHANGE FLOOR w/WASTE PAN

ENV-005FPU-M `MOUSE` `CLASSIC`
ENV-005FPU-R `RAT` `STANDARD`

Combines a removable stainless steel waste pan and floor into one unit.

- Floor can be changed easily between subjects for improved throughput
- Stainless steel grid rods mounted in white polypropylene supports

QUICK DISCONNECT HARNESS

ENV-005-QD `RAT` `STANDARD`   **ENV-307A-QD** `MOUSE` `CLASSIC`
ENV-005A-QD `MOUSE` `STANDARD`   **ENV-307W-QD** `MOUSE` `WIDE`

- Floor can be changed easily between subjects for improved throughput
- Spring-loaded contacts mounted in a polypropylene strip and wired in sequence to a DB-9 connector, when installed, each rod presses firmly against a contact for reliable shock delivery
- Attaches to the rear of the chamber and remains in place when the floor is removed for easy cleaning without wires

NOTE: Will not work with older floors that have been drilled and tapped.

- Use the:
  - SG-219G-10 | M/F DB-9 Shock Output Cable to connect with an aversive stimulator
  - SG-219G2M | Lickometer Controller Cable to connect with standard contact lickometers
  - SG-219G | M/F DB-9 Shock Output Cable to connect with switching lickometers

US Pat. No. 6412441 B1, Canadian Pat. No. 2,368,344, UK Pat. No. 1226750, Australian Patent 772111, France 1,226,750, Germany 602 05 143.6, Italy 1,226,750, The Netherlands 1,226,750, European Pat. No. 1226750, other foreign patents pending.

ENV-414S (back)

ENV-414S (front)

ENV-414

	CURRENT OUTPUT	CURRENT RESOLUTION	CONTROL SWITCHING	REMOTE OPERATION	SHOCK DURATION	CABLES NEEDED
ENV-410C	0 - 1 or 0 - 5 mA	0.01 mA or 0.001 mA	opto-isolator	28V DC	1 ms - 60 s	SG-219SC
ENV-413C	0 - 5 mA	0.01 mA	opto-isolator	28V DC Med-PC	1 ms - 60 s	SG-219SC
ENV-414 **ENV-414S**	0 - 1 or 0 - 5 mA	0.01 mA or 0.001 mA	opto-isolator	28V DC	1 ms - 60 s	SG-216A-10 SG-219G-10

ENV-410C

ENV-413C

- Available as an interface card or standalone unit
- Combines a shocker *(ENV-410C)* and scrambler *(ENV-412C)* into one unit
  - Less expensive than buying them individually
  - Provides only scrambled foot aversive stimulation
- 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 during calibration
- Dummy load/subject switch
- Adjust current using a two position range switch and adjustment knob

AVERSIVE STIMULATOR/SCRAMBLER MODULE

ENV-414 MOUSE+RAT

- Double-width panel, install in our interface cabinets *(see power+control interface brochure)*

NOTE: DB-9 cable connecting the harness to a grid floor scrambler is sold separately (SG-219G-10).

AVERSIVE STIMULATOR/SCRAMBLER STANDALONE

ENV-414S MOUSE+RAT

- Control via:
  - 28V DC to ground signal
  - 5V TTL signal
  - Remote switch closure
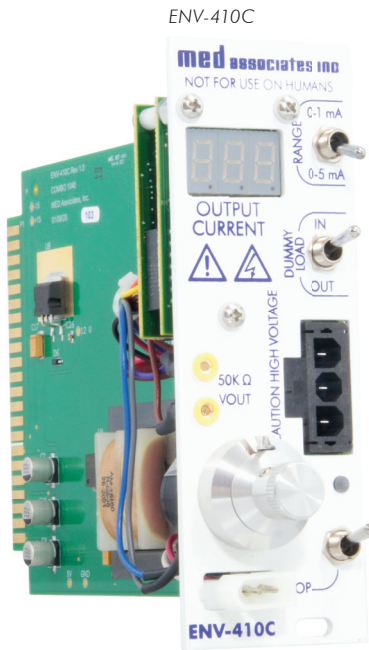
SPECIFICATIONS

Overall Size *(WxHxD)*: 8.25" x 2.75" x 9"
  (21 x 7 x 22.9 cm)

Power Source: 115V AC, 60 Hz *(also available in 230V)*

NOTE: DB-9 cable connecting the harness to a grid floor scrambler is sold separately (SG-219G-10).

- 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
- Chain multiple modules in the same cabinet using a DB-15 cable *(SG-219D)*.

CONSTANT CURRENT AVERSIVE STIMULATION MODULE DUAL RANGE
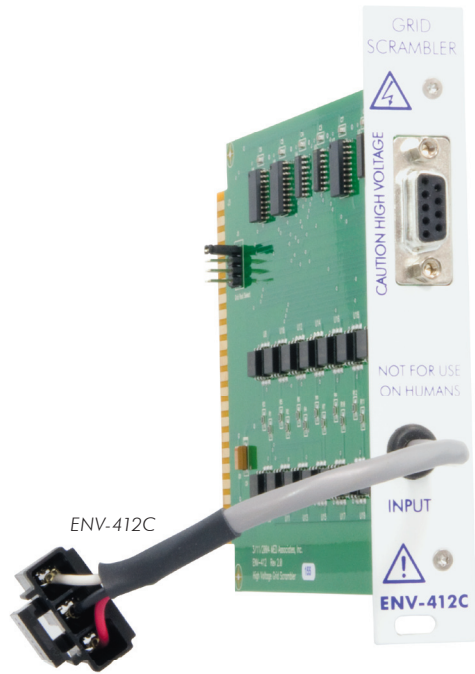
ENV-410C MOUSE+RAT

- Adjust current using a two position range switch and adjustment knob

  - Two ranges: 0–1 or 0–5 mA

CONSTANT CURRENT AVERSIVE STIMULATION MODULE COMPUTER CONTROLLED

ENV-413C MOUSE+RAT

- Expands control of the Dual Range Stimulator *(ENV-410C)* with the added ability to change current intensity, onset, and duration remotely using Med-PC

	SHOCK DURATION	REPEAT PERIOD
ENV-412C	30.8 ms	277.2 ms

ENV-412C

ENV-415C

SOLID STATE GRID FLOOR SCRAMBLER MODULE

ENV-412C MOUSE+RAT

- Single-width panel, install in our interface cabinets *(see power+control interface brochure)*
- Use with aversive stimulation modules *(ENV-410C or ENV-413C)*
- Each output is a direct semiconductor switch which keeps the current level the same regardless of the number of grids contacted or in the event a contact is broken
- Current is "scrambled" by cycling down the row of grid rods, jumping back to the first rod in the sequence, and repeating
- Rodent has to be touching more than one bar to receive aversive stimulation
- Control Switching = opto-isolator

DUAL A/B SCRAMBLER CONTROL MODULE

ENV-415C MOUSE+RAT

- Single-width panel, install in our interface cabinets *(see power+control interface brochure)*
- Connects two Solid State Grid Floor Scrambler Modules *(ENV-412C)* to a single constant current aversive stimulation source for shuttle avoidance and some yoked control designs
- Designed for "either/or" aversive stimulation applications
- If concurrent aversive stimulation is required for multiple grids, separate constant current aversive stimulation sources are required to ensure optimal regulation
- Three outputs are required:
  ○ To select scrambler "A"
  ○ To select scrambler "B"
  ○ To control the stimulation

PHM-100STV

ENV-421-B (back)

ENV-421-B

AVERSIVE STIMULUS TEST PACKAGE

ENV-421-B MOUSE+RAT

Ammeter shows the amount of current produced by an aversive stimulator.

- Module connects two clip leads to the grid rods
- Digital panel reads the RMS current at the grid rods
- Wireless operation with included LI-ion battery
- Range = 0.05 – 6.5 mA
  - NOTE: Currents below 0.05 mA are displayed as 0.0 mA to avoid incorrectly reading noise as a stimulus

SG-592 (back)

SG-592 (front)

In the event of a computer crash, an output may be inadvertently kept "on". To prevent an animal from receiving continuous aversive stimulation under such an event, add in-line timer to automatically shut the aversive stimulator off.

Can also be used with drug infusion pumps to prevent an overdose or to control a stimulus light.

ADJUSTABLE SAFETY SHUTOFF TIMER

PHM-100STV MOUSE+RAT

- Connects to the standard 28V output signal
- Operation duration is adjusted and set using a potentiometer (value is approximate)
- Value locked in mechanically

MICROPROCESSOR DIGITAL TIMER

SG-592 MOUSE+RAT

- Microprocessor enables more precise duration than the mechanical potentiometer model
- Set timing duration via three-digit push buttons on the front panel
  ○ Range: 0.1 - 99.9 seconds *(0.1 s increments)*
- Initiate timing cycle by:
  - Pressing the "start" button on the unit
  - Sending an "operate" signal from Med-PC

ENV-204	
OPERATION	Remote via Med-PC, using 28 V Output *(6-pin micro-fit Molex to 3-pin mini-molex)*
RESPONSE TIME	< 10 ms of input signal
PELLET SIZES	20mg or 45mg
PELLET TYPE	Grain or sucrose
HOPPER CAPACITY	~4500 (20mg) and ~3000 (45mg)
CONSTRUCTION	Aluminum, brass, neodymium, polycarbonate, stainless steel
OVERALL SIZE	6.9" H x 4" W x 7.4" D *(17.5 x 10.2 x 18.8 cm)*
DISCS *(sold separately)*	20mg pellet disc *(ENV-204D-20)* 45mg pellet disc *(ENV-204D-45)*
MODULAR MOUNTS *(sold separately)*	Modular mount, classic mouse *(ENV-204MM)* Modular mount, wide mouse *(ENV-204MWM)* Modular mount, standard rat *(ENV-204MR)*
90° MODULAR MOUNTS *(sold separately)*	Modular mount, classic mouse, 90° *(ENV-204M90M)* Modular mount, wide mouse, 90° *(ENV-204M90WM)* Modular mount, standard rat, 90° *(ENV-204M90R)*
PEDESTAL MOUNT *(sold separately)*	Pedestal mount *(ENV-204P)*

VERIFEED™ PELLET DISPENSER MODULAR + PEDESTAL

ENV-204   MOUSE+RAT   20+45MG   IR DETECT

Reward variability should be based on your experimental design, not on the performance of your equipment. This method delivers. It has been completely re-invented from the ground up, informed by years of feedback from the field. With multiple design features that ensure reliable delivery and easy maintenance, we are setting the new standard.

NOTE: Modular panel mounts, pedestal stand, and discs sold separately.

HOPPER + MOTOR

• Easy-to-clean hopper snaps to the bracket with magnets, and opens into two separate parts

• Quickly and easily fill, empty, disassemble, and reassemble the hopper without tools

• Compatible with any Med Associates interface

   ◦ Requires one input and output

• Alerts Med-PC when hopper runs empty

• An infrared photo-beam detector is located at the entry point, and if pellet presence is not confirmed, it will run through a logic sequence to dispense a pellet within 10 seconds

   ◦ No additional coding required

DISC

• Change pellet size by swapping out the hopper disc, no further adjustments necessary

• Variable torque motor and optimized entry port prevents crushing delicate pellets, such as sucrose

• Designed to prevent buildup and minimize breakage

BRACKET

• Can be mounted on any modular panel or placed next to the chamber on a pedestal

• Fits on all standard chambers and SACs for both rat and mouse

Modular Mount

90° Modular Mount

Pedestal Mount

	ACCESS OPENING (W×H)
ENV-200FC	2" x 2" (5.08 x 5.08 cm)
ENV-200R1M	2" x 2" (5.08 x 5.08 cm)
ENV-200R1AM	N/A
ENV-300R1AM ENV-300R1AW	N/A
ENV-303FC	1" x 0.8" (2.54 x 2.03 cm)
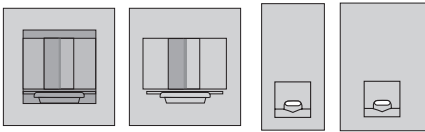
(From left) ENV-200R1M, ENV-200R1AM, ENV-300R1AM, ENV-300R1AW

ENV-200R1M (internally mounted cup)

ENV-300R1AW (externally mounted cup)

ENV-200FC

(From left) ENV-200FC, ENV-303FC

(From left) ENV-200R2M, ENV-200R2MA, ENV-200R7M, ENV-303R2W, ENV-303M, ENV-303W

ENV-303W

ENV-303W detail

ENV-200R7M

ENV-200R7M detail

AD-LIB CUP PELLET RECEPTACLE

ENV-200FC RAT STANDARD 1/4 INTERNAL
ENV-303FC MOUSE WIDE 3/4 INTERNAL

- Provides a reserve of food for ad lib feeding
- For more sophisticated data collection, consider a "take and replace" pellet delivery system
- Add the Pellet Receptacle Door *(ENV-210M-S / ENV-340A)* to limit access
- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*
- Rat model *(ENV-200FC)* requires 1.3" *(3.3 cm)* of space underneath for food storage bin

CUP PELLET RECEPTACLE

ENV-200R1M RAT STANDARD 1/4 INTERNAL
ENV-200R1AM RAT STANDARD 1/4 EXTERNAL
ENV-300R1AM MOUSE CLASSIC 1/2 EXTERNAL
ENV-300R1AW MOUSE WIDE 1/2 EXTERNAL

- External cups are mounted unenclosed, making it ideal for applications where the animal is fitted with a head block for drug infusion or micro-dialysis
- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*
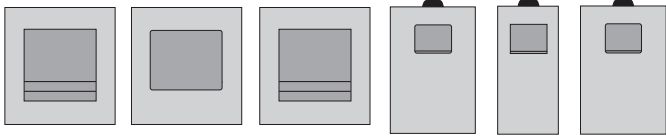
NOTE: For animals fitted with a head block, the "tall" versions are recommended (see page 29)
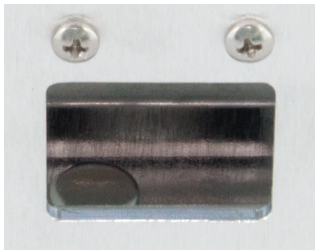
TROUGH PELLET RECEPTACLE

ENV-200R2M RAT STANDARD 1/4 INTERNAL
ENV-200R2MA RAT STANDARD 1/4 INTERNAL
ENV-200R7M RAT STANDARD 1/4 INTERNAL
ENV-303R2W MOUSE CLASSIC 1/2 INTERNAL
ENV-303M MOUSE CLASSIC 1/2 INTERNAL
ENV-303W MOUSE WIDE 1/2 INTERNAL

- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*

NOTE: For animals fitted with a head block, the "tall" versions are recommended (see page 29)

	ACCESS OPENING (W×H)
ENV-200R2M	2" x 2" (5.08 x 5.08 cm)
ENV-200R2MA	2" x 1.65" (5.08 x 4.19 cm)
ENV-200R7M	2" x 2" (5.08 x 5.08 cm)
ENV-303R2W	1" x 0.8" (2.54 x 2.03 cm)
ENV-303M ENV-303W	1" x 0.8" (2.54 x 2.03 cm)

ENV-202R2MA-6

	ACCESS OPENING (WxH)	CAPACITY
ENV-200R1AM-LP ENV-200R1AM-LP-12	2" x 2" *(5.08 x 5.08 cm)*	15.2 mL
ENV-202RMA	2" x 2" *(5.08 x 5.08 cm)*	1.5 mL
ENV-303RMA ENV-303RMW	1" x 0.8" *(2.54 x 2.03 cm)*	1.5 mL
ENV-303RMA-3 ENV-303RMW-3	1" x 3" *(2.54 x 7.62 cm)*	1.5 mL

(From left) ENV-200R1BM, ENV-200R3AM, ENV-200R3BM, ENV-303LP, ENV-303LPHD, ENV-303LPHD-RL-3, ENV-303LPHDW, ENV-303LPHDW-RL-3

(From left) ENV-202R2MA, ENV-303RMA, ENV-303RMA-3, ENV-303RMW-3, ENV-303RMW

PELLET TROUGH/LIQUID CUP RECEPTACLE

ENV-202RMA RAT STANDARD 1/4 INTERNAL
ENV-303RMA MOUSE CLASSIC 1/2 INTERNAL
ENV-303RMA-3 MOUSE CLASSIC 1/1 INTERNAL
ENV-303RMW MOUSE WIDE 1/2 INTERNAL
ENV-303RMW-3 MOUSE WIDE 1/1 INTERNAL

- Separate cup and trough
- Use a syringe pump for liquid delivery *(sold separately)*
- Uses the same stainless steel cup as the pellet receptacle *(ENV-200R1M)*
- All wetted parts are stainless steel
- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*

SPECIFICATIONS
- Cup spacing = 0.904" apart from center *(dual cup models only)*
- Pipe(s) = 18 gauge

NOTE: For animals fitted with a head block, the "tall" versions are recommended (see page 29)
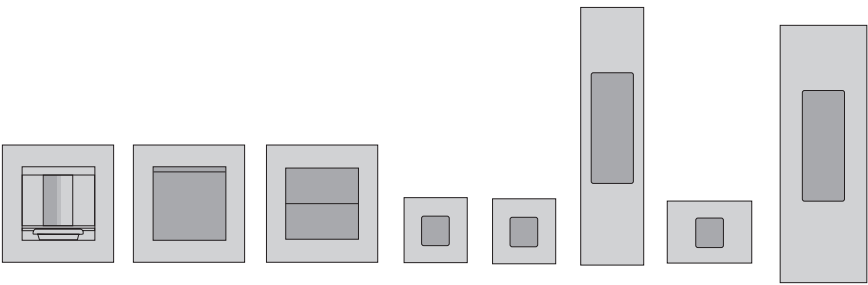
ENV-200R1AM-LP

PELLET + LIQUID CUP RECEPTACLE

ENV-200R1AM-LP RAT STANDARD 1/4 1 CUP 1 PIPE EXTERNAL 18 GAUGE
ENV-200R1AM-LP-12 RAT STANDARD 1/4 1 CUP 1 PIPE EXTERNAL 12 GAUGE

- For use with either pellet or liquid, both are piped to a single cup
- Cups are mounted unenclosed, making it ideal for applications where the animal is fitted with a head block for drug infusion or micro-dialysis

ENV-200R3AM

ENV-200R1BM

	ACCESS OPENING (WxH)	CAPACITY
ENV-200R1BM	2" x 2" *(5.08 x 5.08 cm)*	16.7 mL
ENV-200R3M ENV-200R3AM ENV-200R3BM	2" x 2" *(5.08 x 5.08 cm)*	1.5 mL
ENV-303LP ENV-303LPHD ENV-303LPHDW	0.75" x 0.8" *(1.9 x 2.03 cm)*	1.5 mL
ENV-303LPHD-RL-3 ENV-303LPHDW-RL-3	1.13" x 3" *(2.86 x 7.62 cm)*	1.5 mL

LIQUID CUP RECEPTACLE

ENV-200R1BM RAT STANDARD 1/4 1 CUP 2 PIPES INTERNAL
ENV-200R3AM RAT STANDARD 1/4 2 CUPS 2 PIPES INTERNAL
ENV-200R3BM RAT STANDARD 1/4 1 CUP 1 PIPE INTERNAL
ENV-303LP MOUSE CLASSIC 1/4 1 CUP 1 PIPE INTERNAL
ENV-303LPHD MOUSE CLASSIC 1/4 1 CUP 1 PIPE INTERNAL
ENV-303LPHD-RL-3 MOUSE CLASSIC 1/1 1 CUP 1 PIPE LIGHT INTERNAL
ENV-303LPHDW MOUSE WIDE 1/4 1 CUP 1 PIPE INTERNAL
ENV-303LPHDW-RL-3 MOUSE WIDE 1/1 1 CUP 1 PIPE LIGHT INTERNAL

- More accurate than liquid valve style drop dispensers
- Prevents evaporation from the reservoir typical with liquid dippers
- Ideal for alcohol studies
- Use with any syringe pump for precise delivery of liquid reward

- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*
  - Receptacle light models *(-RL)* have a light built-in

SPECIFICATIONS
Pipe(s) = 18 gauge

NOTE: For animals fitted with a head block, the "tall" versions are recommended (see page 29)

ENV-200R3M

ENV-201A

LIQUID DROP DISPENSER

ENV-201A MOUSE+RAT

- Attaches to the top of the pellet / liquid drop receptacle *(ENV-200R3M)*, sold separately
- Miniature solenoid-activated valve dispenses drops or small quantities of non-viscous liquid reinforcer
- Release from one to several drops of approximately 0.01cc, valve activated by a 28V DC output, and controlled by an adjustable timer:
  - Drop/Activation Interval *(approx)* = 1 s / 2.5 s
- Reservoir consists of a 65cc syringe tube that is easily removed from the luer fitting on the valve
- Syringe tube can be sealed and is fully calibrated, measurements of total volume are easy to make
- Economic option
- Controller *(LxWxH)*: 4" x 2.75" x 2.25"
  (10.16 x 7 x 5.72 cm)

LIQUID DROP RECEPTACLE

ENV-200R3M MOUSE+RAT STANDARD 1/4 1 CUP 1 PIPE INTERNAL

- Use with Liquid Drop Dispenser *(ENV-201A)*
- Prevents evaporation from the reservoir typical with liquid dippers
- Ideal for alcohol studies
- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*

SPECIFICATIONS

Pipe(s) = 18 gauge

NOTE: For animals fitted with a head block, the "tall" versions are recommended (see page 29)

CUP PELLET RECEPTACLE TALL

ENV-200R1M-6 RAT STANDARD 3/4 INTERNAL

TROUGH PELLET RECEPTACLE TALL

ENV-200R2M-6.0	RAT	STANDARD	3/4	INTERNAL
ENV-200R2MA-6	RAT	STANDARD	3/4	INTERNAL
ENV-303M-4.25	MOUSE	CLASSIC	1/1	INTERNAL
ENV-303W-4.25	MOUSE	WIDE	1/1	INTERNAL

PELLET TROUGH/LIQUID CUP RECEPTACLE TALL

ENV-202RMA-6	RAT	STANDARD	3/4	INTERNAL
ENV-303RMW-4.25	MOUSE	WIDE	1/1	INTERNAL

LIQUID CUP RECEPTACLE TALL

ENV-200R1BM-6 RAT STANDARD 3/4 1 CUP 2 PIPES INTERNAL

ENV-200R3AM-6 RAT STANDARD 3/4 2 CUPS 2 PIPES INTERNAL

ENV-200R3BM-4.5 RAT STANDARD 1/2 1 CUP 1 PIPE INTERNAL

ENV-200R3BM-6 RAT STANDARD 3/4 1 CUP 1 PIPE INTERNAL

ENV-303LPHD-4.25 MOUSE CLASSIC 1/1 1 CUP 1 PIPE INTERNAL

ENV-303LPHDW-4.25 MOUSE WIDE 1/1 1 CUP 1 PIPE INTERNAL

ENV-303LPHDW-RL-4.25 MOUSE WIDE 1/1 1 CUP 1 PIPE INTERNAL

LIQUID DROP RECEPTACLE TALL

ENV-200R3M-4.5 MOUSE+RAT STANDARD 1/2 1 CUP 1 PIPE INTERNAL

ENV-200R3M-6 MOUSE+RAT STANDARD 3/4 1 CUP 1 PIPE INTERNAL

- Extra tall 6" opening is ideal for applications where the animal is fitted with a head block for drug infusion or micro-dialysis
- Add a receptacle light for illumination or a head entry detector *(sold separately, see page 33-34)*
  - Receptacle light models *(-RL)* have a light built-in

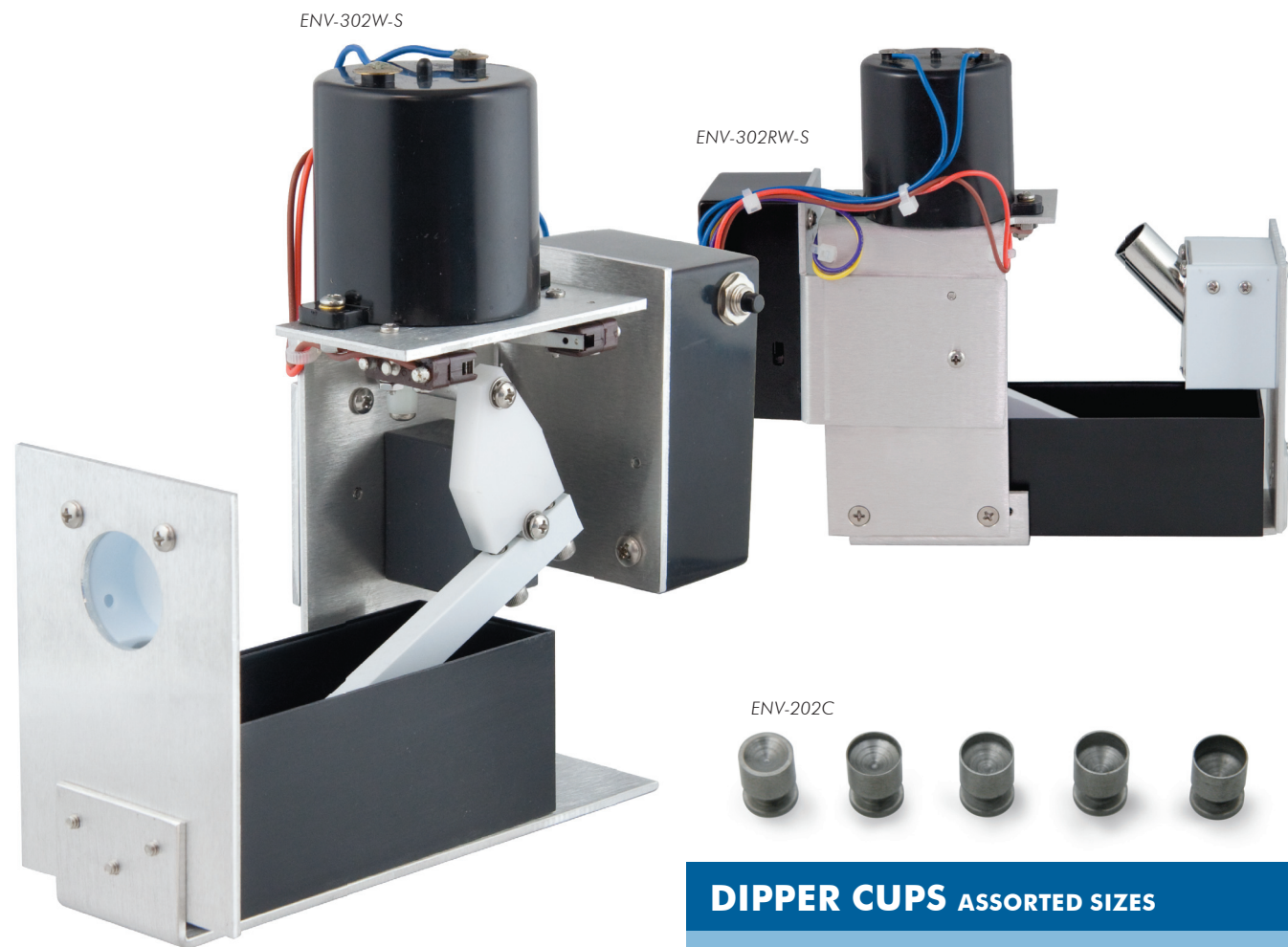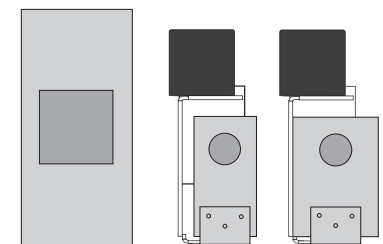| ACCESS OPENING (W×H)	
ENV-200R3M-4.5	2" x 4.5" *(5.08 x 11.43 cm)*
ENV-200R1M-6 ENV-200R2M-6.0 ENV-200R1BM-6 ENV-200R2MA-6 ENV-200R3AM-6 ENV-200R3BM-6 ENV-200R3M-6 ENV-202RMA-6	2" x 6" *(5.08 x 15.24 cm)*
ENV-303LPHD-4.25 ENV-303LPHDW-4.25 ENV-303LPHDW-RL-4.25 ENV-303M-4.25 ENV-303RMW-4.25 ENV-303W-4.25	1.13" x 4.25" *(2.86 x 10.8 cm)*

ENV-302W-S detail

ENV-202M-S, ENV-302M-S, ENV-302W-S

ENV-302W-S

ENV-302RW-S

	ACCESS OPENING (W×H)	VERTICAL CLEARANCE
ENV-202M-S ENV-202RM-S	2" x 2" *(5.08 x 5.08 cm)*	N/A
ENV-302M-S ENV-302W-S	0.88" ID *(2.22 cm)*	2.5" *(6.35 cm)*
ENV-302RM-S ENV-302RW-S	1" x 0.8" *(2.54 x 2.03 cm)*	2" *(5.08 cm)*

ENV-202C

DIPPER CUPS ASSORTED SIZES

ENV-202C   MOUSE+RAT || ASSORTMENT
ENV-202C-10   MOUSE+RAT || 0.1 CC
ENV-202C-08   MOUSE+RAT || 0.08 CC
ENV-202C-06   MOUSE+RAT || 0.06 CC
ENV-202C-04   MOUSE+RAT || 0.04 CC
ENV-202C-02   MOUSE+RAT || 0.02 CC

Stainless steel cups snap onto any dipper delivery arm without tools.

• Includes one of each:
  • 0.02 / 0.04 / 0.06 / 0.08 / 0.10 cc
    (pictured left to right)

NOTE: Volumes are nominal, actual volumes may vary and will depend on the viscosity of the fluid used.

ENV-302RW-S detail

ENV-202RM-S, ENV-302RM-S, ENV-302RW-S

SWITCHABLE LIQUID DIPPER w/DUAL PELLET RECEPTACLE

ENV-202RM-S   RAT || STANDARD || 1/2
ENV-302RM-S   MOUSE || CLASSIC || 1/2
ENV-302RW-S   MOUSE || WIDE || 1/2

Dipper with a split floor receptacle capable of delivering both pellet and liquid rewards to the same area.

• Pellet dispensers *(ENV-204)* must be ordered separately

SWITCHABLE LIQUID DIPPER

ENV-202M-S   RAT || STANDARD || 1/2
ENV-302M-S   MOUSE || CLASSIC || 1/2
ENV-302W-S   MOUSE || WIDE || 1/2

• Ideal for applications where the availability of the reinforcer is time-limited once earned (user-defined)
• Motor driven dipper arm raises a cup to deliver a precise volume of liquid
  ◦ Arm movement is smooth and consistent to minimize spillage
  ◦ Cup is presented to the animal as close to the front panel as possible
• Can be operated in two positions:
  • Normally down = arm remains up only as long as power is applied
  • Normally up = arm remains in the up position until activated by a 28 V DC control line
• Use with anything from water to highly viscous fluids such as condensed milk
• Includes 0.01 cc stainless steel cup
  • Assorted cup sizes up to 0.1 cc are available *(ENV-202C)* or individually *(custom sizes also available with modified receptacle)*

Add a receptacle light for illumination or a head entry detector for pellet detection *(sold separately, see page 33-34)*

NOTE: Volumes are nominal, actual volumes may vary and will depend on the viscosity of the fluid used.

ENV-340A

ENV-210M-S detail

ENV-210M-S shown on ENV-007 chamber

ENV200-27A

ENV-302RL-2

SG-205FS

SG-205

PELLET RECEPTACLE DOOR

ENV-210M-S RAT STANDARD
ENV-340A MOUSE WIDE

- Limit access to the reinforcer by placing this motorized door in front of a standard receptacle cup
  ◦ Modified receptacle and custom chamber top required, contact Sales for more info

- Aluminum door comes standard
  • Clear acrylic door also available *(M-CLEAR)*
- Controlled via 28V DC

RECEPTACLE LIGHT

ENV-200RL-LED RAT STANDARD
ENV-302RL-1 MOUSE TOP MOUNT
ENV-302RL-2 MOUSE BACK MOUNT
ENV-303RL MOUSE WIDE
ENV-303RL-3 MOUSE CLASSIC

- Can be added to most receptacles at time of order

NOTE: When light is top-mounted, it may prevent placement of some modules directly above the receptacle

DUAL FEEDER "Y" TUBE ADAPTER

ENV-200-27 MOUSE
ENV-200-27A RAT

- Connects two pellet dispensers to one receptacle

SPECIFICATIONS

Tube = 0.5" OD *(barbed)*
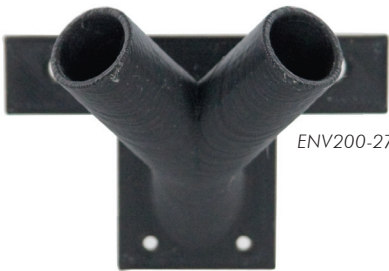
HAND-HELD PUSH BUTTON
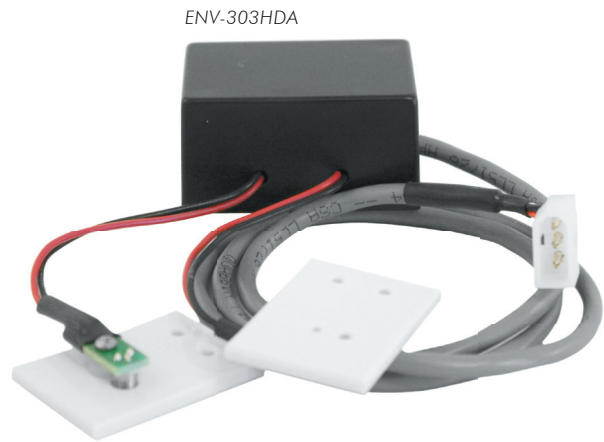
SG-205 MOUSE+RAT

FOOT SWITCH

SG-205FS MOUSE+RAT

- Can be used as a input device to trigger an event remotely
- Can be used as a output device with a Y-Cable *(SG-216C)* for shaping

SPECIFICATIONS

Cable = 15' L *(4.6 m)*

NOTE: Specify the intended use at time of order so that the proper connector can be added

ENV-303HDA

ENV-253SD

ENV-253

ENV-253B

ENV-256I

Photobeams allow for easy monitoring of positional information, applications include:

- Activity monitoring
- Head-entry into pellet receptacles
- Monitoring the presence of a food pellet in a receptacle trough

...and more

HEAD ENTRY DETECTOR
FOR LIQUID DIPPERS

ENV-302HD MOUSE | WIDE

- Add to liquid dipper receptacles for mice
- Use with any switch input module to produce a "response" whenever an animal breaks the beam

HEAD ENTRY DETECTOR
FOR PELLET RECEPTACLES

ENV-303HDA MOUSE | CLASSIC
ENV-303HDW MOUSE | WIDE

- Add to most pellet or dipper receptacles for mice
  - Mounts to the outside of a receptacle *(not included)*
- Use with any switch input module to produce a "response" whenever an animal breaks the beam

INDIVIDUAL INFRARED
SOURCE/DETECTOR PAIR

ENV-253SD MOUSE+RAT

- Single IR light source and detector
  - Order as many pairs as needed to go with the 4, 8, or 16 channel controllers
  - Encased in plastic cylinders with holes for mounting screws
- Maximum Range = $x < 30$" *(76.2 cm)*
- Cylinders *(x2)* = 0.75" OD *(1.91 cm)*
- Cables *(x2)* = 4' L *(1.3 m)*

HEAD ENTRY DETECTOR
FOR SOLID/LIQUID RECEPTACLES

ENV-254-CB MOUSE+RAT

- Add to most pellet or dipper receptacles for mice or rats
- Use with any switch input module to produce a "response" whenever an animal breaks the beam
- Single IR light source and detector
  - Encased in PVC blocks that mount to the outside of a receptacle *(not included)*
  - Not suitable for areas with high levels of ambient light
- Maximum Range = $x < 6$" *(15.24 cm)*

INFRARED SOURCE/DETECTOR/
CONTROLLER SINGLE CHANNEL

ENV-253B MOUSE+RAT | 1 CHANNEL

- Designed for applications requiring a single photo-beam
- Single optical integrated circuit sensor and 40kHz pulsed IR source using an infrared LED
- Includes 28 V DC compatible controller housed in a plastic case
- Maximum Range = $x < 30$" *(76.2 cm)*
- Cylinders *(x2)* = 0.75" OD *(1.91 cm)*
- Cables *(x2)* = 4' L *(1.3 m)*

NOTE: Multiple units in a common area are not recommended. For such applications, see the four channel IR controller (ENV-253), or the sixteen channel IR controller (ENV-256I).
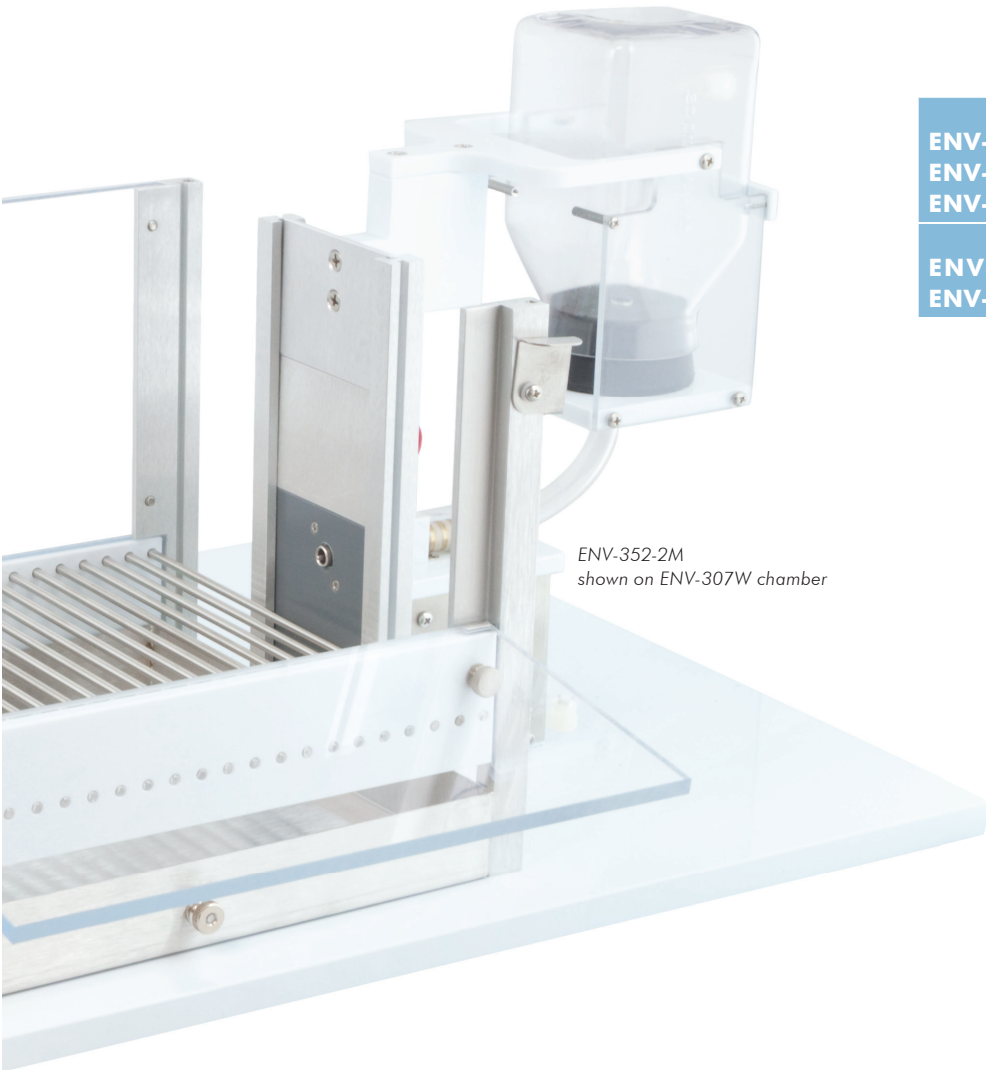
INFRARED CONTROLLER

ENV-253 MOUSE+RAT | 4 CHANNEL
ENV-256I-8 MOUSE+RAT | 8 CHANNEL
ENV-256I MOUSE+RAT | 16 CHANNEL

- Synchronizes the 40 kHz pulse stream emitted by each light source with the activation of each detector at a rate of 3.9 kHz
  - Synchronizing at this rate effectively creates a continuous beam, eliminating interference from adjacent beams or outside light sources
  - Pulse produces a beam that is better focused and casts a sharper "shadow"
- Use with any standard, SuperPort, or SmartCtrl card *(sold separately, see Power + Control Interface brochure)*
- Minimum Spacing = $x > 0.75$"
  - *NOTE: Away from another IR pair to prevent interference, measured center to center*
- Minimum Range = $x > 0.25$" *(0.635 cm)*
- Maximum Range = $x < 30$" *(76.2 cm)*
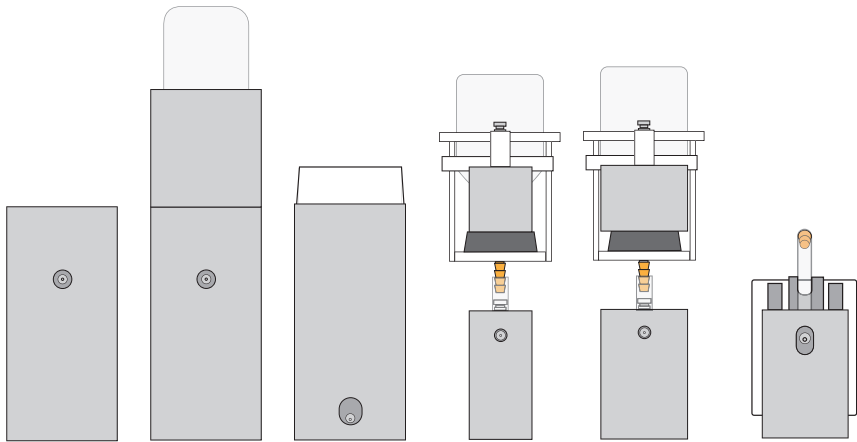- Carrier Frequency = 40 kHz
- Optical Wavelength = 940 nm

SIPPER (OD)	
ENV-252A ENV-252AM ENV-252M	0.5" (1.27 cm)
ENV-352-2M ENV-352-2W	0.375" (0.95 cm)

ENV-352-2M shown on ENV-307W chamber

(from left) ENV-252A, ENV-252AM, ENV-252M, ENV-352-2M, ENV-352-2W, ENV-352AW
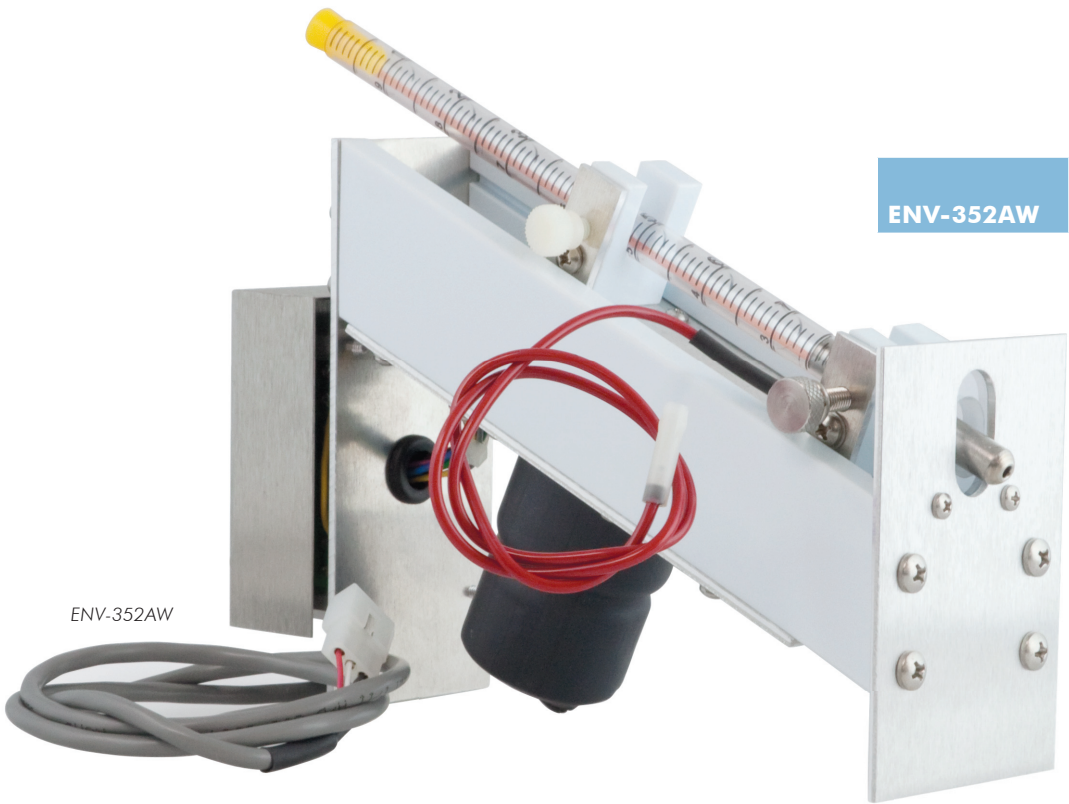
ACCESS OPENING (W×H)	
ENV-352AW	0.5" x 1" (1.27 x 2.54 cm)

ENV-352AW

RETRACTABLE SIPPER w/LIXIT + BOTTLE

ENV-252A [RAT] [STANDARD] [1/2] [BOTTLE]
ENV-252AM [RAT] [STANDARD] [1/2] [BOTTLE]
ENV-252M [RAT] [STANDARD] [1/2] [BOTTLE]

ENV-352-2M [MOUSE] [CLASSIC] [3/4] [BOTTLE]
ENV-352-2W [MOUSE] [WIDE] [1/2] [BOTTLE]

- Includes standard water bottle and Lixit® valve
- Horizontal Lixit® needle valve connects to a 28V DC solenoid valve to prevent liquid flow when the Lixit® is retracted, even if the needle is displaced
  - Valve moves in and out quickly without spillage
  - Extensive travel of the tube ensures that the rodent cannot reach it when retracted
- Operates on 28 V DC with a ground output

- Lixit Extension (into arena): 0.625" *(1.6 cm)*
- Bottle: 8 oz *(236.6 mL)*
  - Extra bottles available for fast change-outs between subjects, contact sales for more info
- Model ENV-252A only:
  - Connect to a plastic carboy bottle (or any suitable liquid reservoir) with the included Tygon® tubing *(0.25"/0.6 cm)*

RETRACTABLE SIPPER w/LIXIT + PIPETTE

ENV-352AW [MOUSE] [WIDE] [3/4] [PIPETTE]

- Motor driven sipper tube for programmed control
- Pipette capacity = 10 mL

ENV-350RM

(from left) ENV-251L, ENV-251M, ENV-351M, ENV-351R, ENV-351W,

ENV-251L

ENV-251M
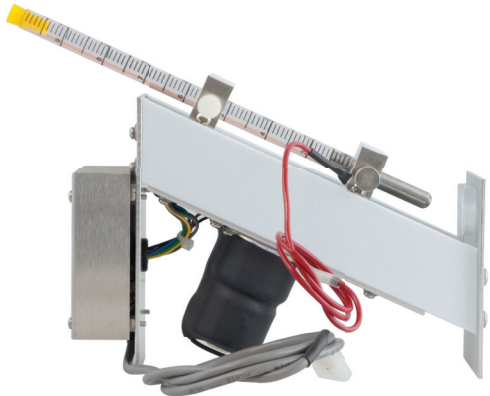
	ENV-251L	ENV-251M	ENV-351M/-351R/-351W
ACCESS OPENING (W×H)	2" x 2" (5.08 x 5.08 cm)	2" x 2" (5.08 x 5.08 cm)	1" x 1.63" (2.54 x 4.13 cm)
VERTICAL CLEARANCE	4.5" (11.43 cm)	3.75" (9.53 cm)	4.5" (11.43 cm)
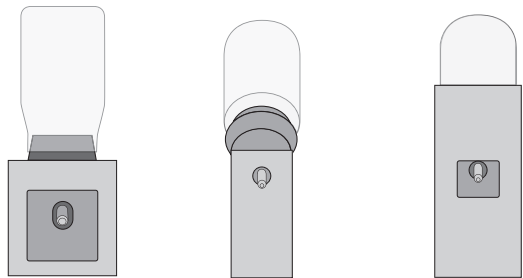
	ENV-250RM	ENV-350RM	ENV-350CW
ACCESS OPENING (W×H)	2" x 2" (5.08 x 5.08 cm)	N/A	1" x 1.13" (2.54 x 2.86 cm)
VERTICAL CLEARANCE	5" (12.7 cm)	3.25" (8.26 cm)	2.75" (6.99 cm)

LIGHT PIPE LICKOMETER w/PHOTOBEAM CONTROLLER

ENV-251M RAT STANDARD 1/4
ENV-351M MOUSE CLASSIC 5/8

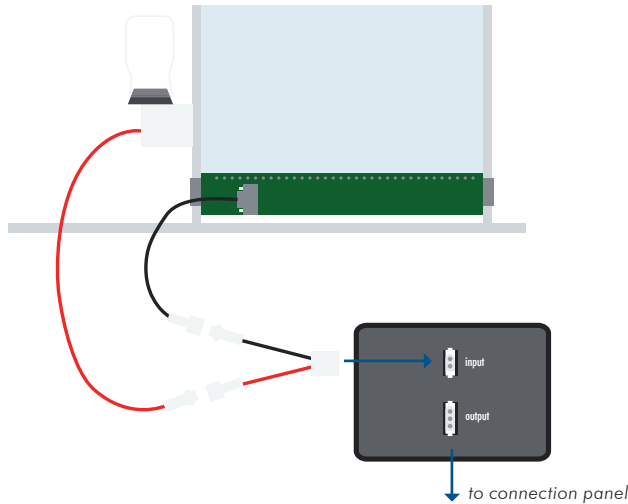**ENV-351R** RAT STANDARD 3/8
ENV-351W MOUSE WIDE 5/8

- Photobeam is directed through the glass pipes in front of the sipper tube to record beam breaks

- This unit may be preferred to the contact lickometer in applications using scrambled foot aversive stimulation

WATER BOTTLE + SIPPER TUBE

ENV-250RM RAT STANDARD 1/4
ENV-350RM MOUSE CLASSIC 1/2

ENV-350CW MOUSE WIDE 3/4

- Thumbscrew secures the sipper tube and connects to a lead for the contact lickometer amplifier
- Use in one of two ways:
  - As-is for ad-lib delivery of water (or other liquids)
  - Add a contact lickometer to record lick counts

- A replacement bottle with stopper and sipper tube can be ordered *(ENV-250BT for Rat, ENV-350BT for mouse)*
- PVC plastic mounting panel decreases static
- Drain fitting may be connected to plastic tubing to collect spilled liquid

LICKOMETER w/PHOTOBEAM CONTROLLER

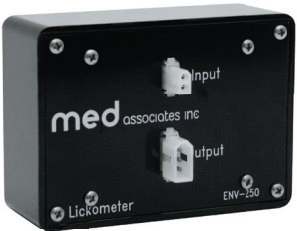**ENV-251L** RAT STANDARD 1/4+1/8

- Places the sipper tube behind a "V" plate so that the animal is forced to lick for liquid delivery
- An infrared photobeam is placed between the stainless steel plate and the sipper tube to accurately count each beam break by the tongue.
  - *NOTE: This count may be much less than the count provided by the "light pipe" configuration where any part of the snout can break the beam. We do not recommend substituting one for the other in an ongoing study.*

- This unit may be preferred to the contact lickometer in applications using scrambled foot aversive stimulation
- Extra bottles available for fast change-outs between subjects, contact sales for more info

NOTE: Lickometer uses a 1/4 panel, and the controller uses a 1/8 panel. To fill the empty space with the fewest panels, use a 1/2 and 1/8 panel.
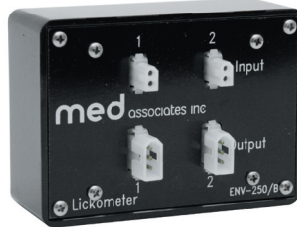
to connection panel

ENV-250

ENV-250B

ENV-250C

Single contact lickometer controller (ENV-250) example setup: Classic mouse chamber with VeriFEED pellet dispenser, exterior cup pellet receptacle, house light, water bottle + sipper tube, and a grid floor with quick disconnect harness

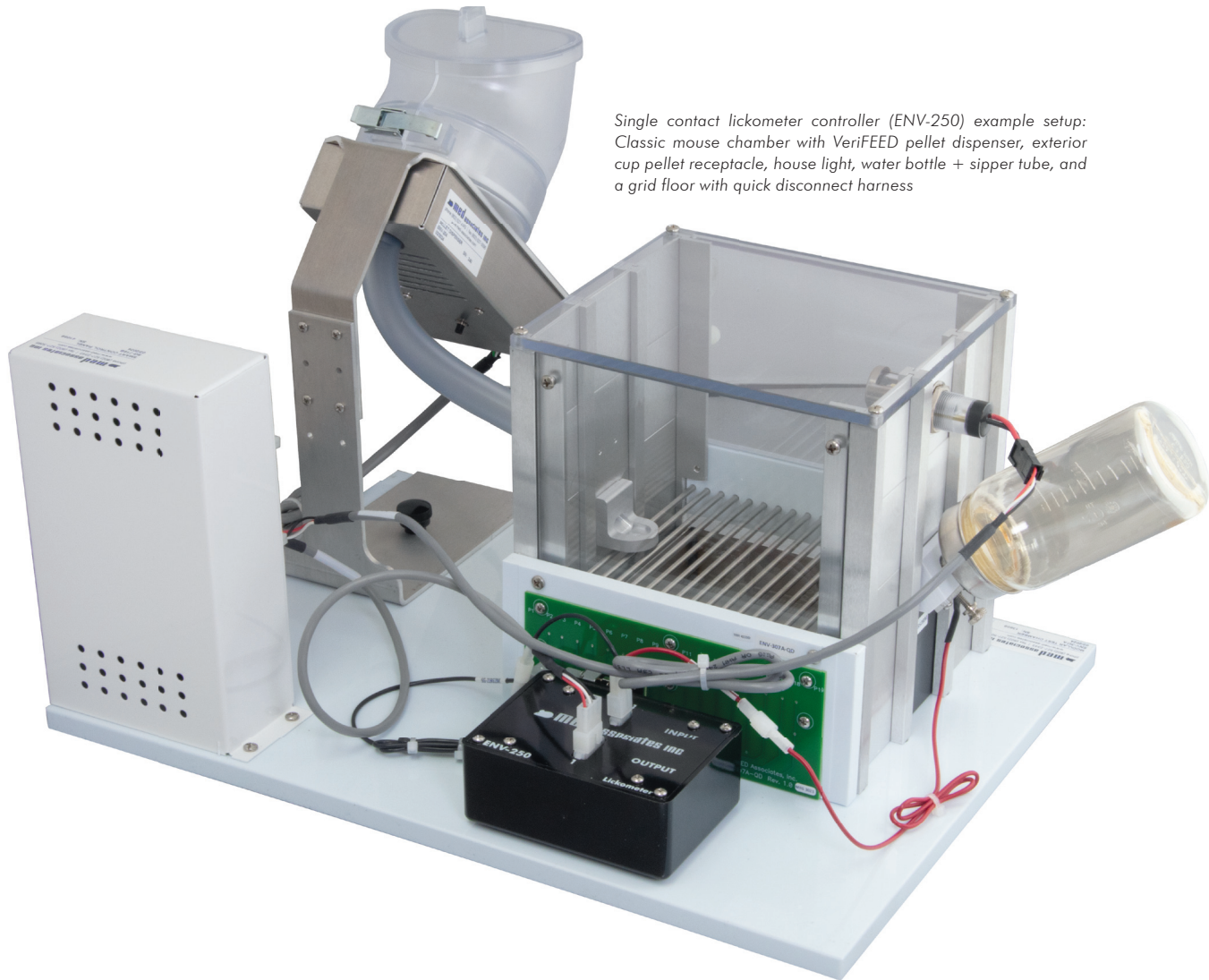# CONTACT LICKOMETER CONTROLLER

ENV-250 MOUSE+RAT | SINGLE
ENV-250B MOUSE+RAT | DUAL

ENV-250C MOUSE+RAT | TRIPLE

- Record licks from drinking devices installed in the same chamber
  - Connects to the sipper tube and grid floor
  - When the animal is both touching the grid floor and licking the tube, the circuit is completed and a signal is sent to the interface and input count is registered
- Output drinking connector plugs directly into an open input of a suitable connection panel

- Registers input impedance up to 8.3 mega-ohms (MΩ) with a subject current of 0.6 micro-amps (µA)
- Not suitable for aversive stimulation suppression
- Requires DB-9 to mini molex cable *(SG-219G2M)*

Note: Grid floor harnesses may be required to complete a lickometer package. Contact Sales with any questions.

ENV-250S (back)

(front)

ENV-250A-C

ENV-311A

ROD (OD×L)	
ENV-111A	0.25" x 4.7" *(0.64 x 11.94 cm)*
ENV-311A	0.19" x 3.78" *(0.47 x 9.6 cm)*
ENV-311W	0.19" x 3.78" *(0.47 x 9.6 cm)*

LICKOMETER GRID SWITCH

ENV-250S   MOUSE+RAT

- Alternative to the Switching Contact Lickometer Controller *(ENV-250A-C)*
  - Does not include lickometer amplifier, and must be used with one of the standard lickometers *(ENV-250 / -250B / -250C)*
- Delivers scrambled aversive foot stimulation with any of our lickometers by switching each of the nine leads of the grid harness between the lickometer amplifier and the outputs of the Solid State Grid Floor Scrambler
- Aversive stimulation delivery briefly interrupts lick data collection
  - For continuous data collection use one of our photobeam lickometers *(ENV-251L / -251M)*
- Requires ᴹ/ꜰ DB-9 shock cable *(SG-219G)*

Note: Grid floor harnesses may be required to complete a lickometer package. Contact Sales with any questions.

SWITCHING CONTACT LICKOMETER CONTROLLER

ENV-250A-C   MOUSE+RAT

- Complete lickometer unit that will also switch a direct aversive stimulation output to the sipper tube spout
- Switching relay is activated by 28 V DC ground
- Input is automatically disabled when aversive stimulation is applied to the sipper tube
- Aversive stimulators *(SG-219G)* and cables *(SG-219N)* are sold separately
- Requires Sabre cable *(SG-219N-C)*

Note: Grid floor harnesses may be required to complete a lickometer package. Contact Sales with any questions.

OMNIDIRECTIONAL CEILING ROD

ENV-111A   RAT   STANDARD

- Stainless steel rod extends from the center of the chamber lid
- Can also substitute for a "pole jump" avoidance response

ENV-311A   MOUSE   CLASSIC
ENV-311W   MOUSE   WIDE

- Used primarily in chaining studies where it is desirable to have a response that is topographically dissimilar from lever pressing
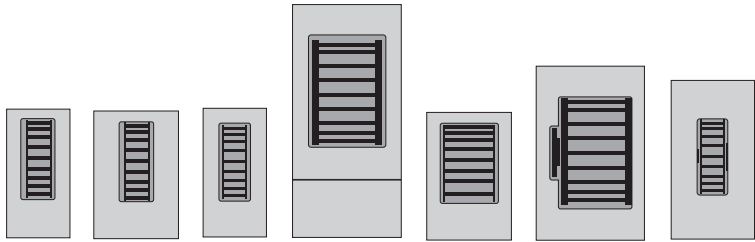
(from left) ENV-113AM, ENV-113AMW, ENV-113AS, ENV-113AW, ENV-113M, ENV-113S, ENV-113WS

	WHEEL WIDTH (L)	ROD SIZE (OD)	ROD SPACING
ENV-113AM ENV-113AMW	0.63" (1.59 cm)	0.09" (0.24 cm)	0.31" (0.8 cm)
ENV-113AR ENV-113AS ENV-113WS	0.63" (1.59 cm)	0.09" (0.24 cm)	0.31" (0.8 cm)
ENV-113AW	1.35" (3.42 cm)	0.09" (0.24 cm)	0.31" (0.8 cm)
ENV-113M	1.56" (3.96 cm)	0.09" (0.24 cm)	0.37" (0.94 cm)
ENV-113S	1.56" (3.96 cm)	0.09" (0.24 cm)	0.43" (1.09 cm)

ENV-113M
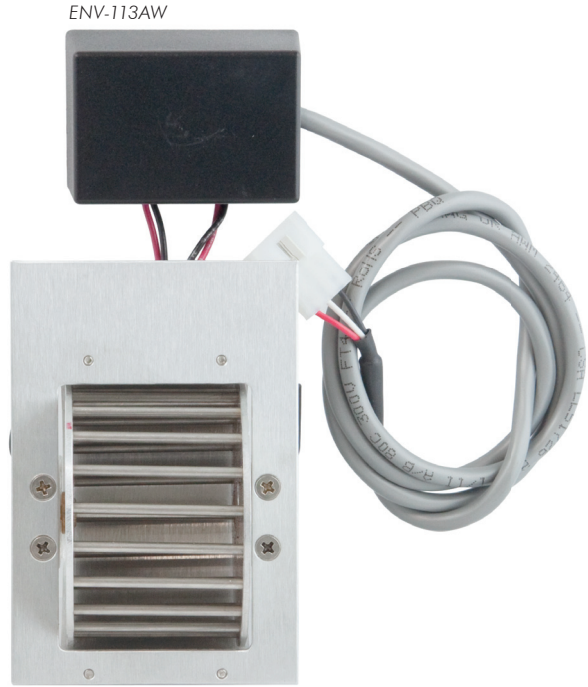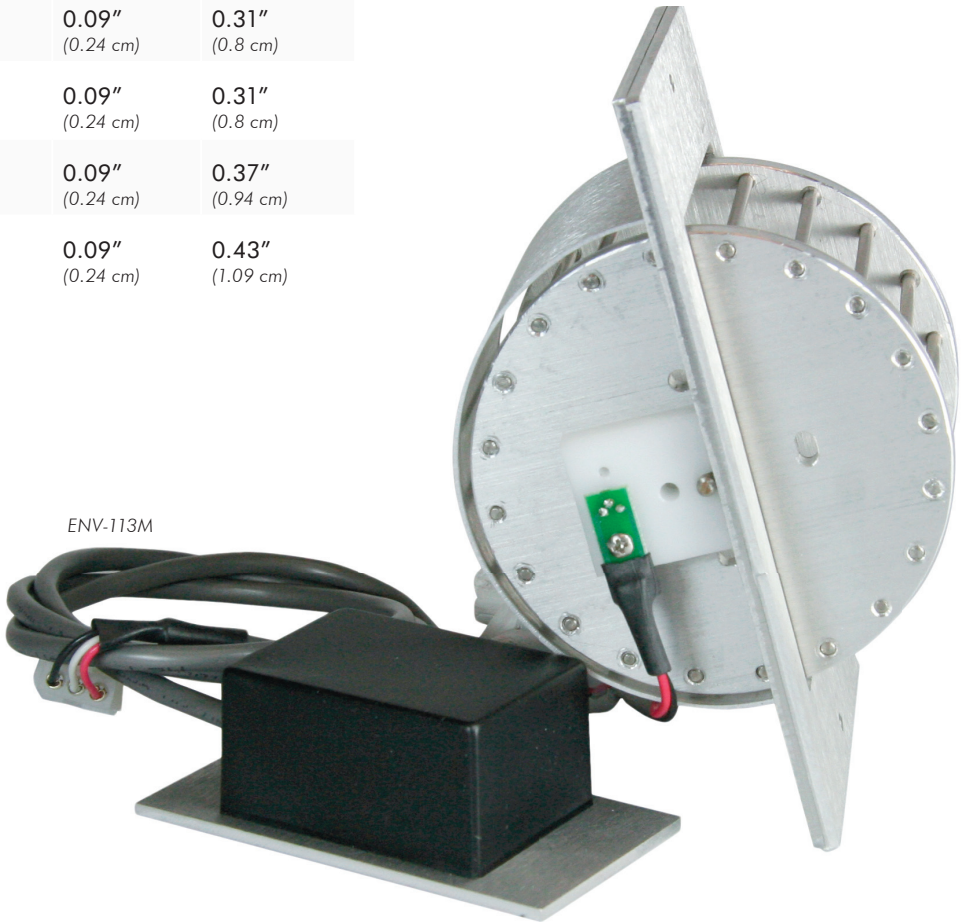
ENV-113AW

ENV-113AS

RESPONSE WHEEL

ENV-113AM MOUSE CLASSIC 1/2
ENV-113AMW MOUSE WIDE 1/2
ENV-113AR MOUSE STANDARD 1/2
ENV-113AW MOUSE WIDE 1/2
ENV-113M RAT STANDARD 3/8

- Stainless steel construction
- Modeled after the design by Dr. Conan Kornetsky while at Boston University
- Well suited for intracranial self stimulation, triadic learned helplessness, or any fine motor performance impairing activity
- Mouse models use an optical encoder to report four responses for every 90 degrees of rotation, while the rat models use a switch
- Minimal drag

MICRO-SWITCH RESPONSE WHEEL

ENV-113AS MOUSE CLASSIC 1/2
ENV-113S RAT STANDARD 3/8
ENV-113WS MOUSE WIDE 3/4

- Stainless steel construction
- Uses a cam operated micro-switch to report four responses for every 90 degrees of rotation
- Provides audible and tactile feedback to the animal

	WIDTH	EXTENDS	EDGE (OD)	POSITION (H)	RESPONSE
ENV-110M	1.82" (4.62 cm)	0.75" (1.9 cm)	0.07" (0.17 cm)	1.09" (00 cm)	25 g (15-100 g adjustable)
ENV-110RM	1.82" (4.62 cm)	0.94" (2.39 cm)	0.33" (0.83 cm)	1.1" (2.79 cm)	25 g (15-100 g adjustable)
ENV-116M	1.88" (4.76 cm)	0.78" (1.97 cm)	0.5" (1.27 cm)	1.28" (3.25 cm)	35 g
ENV-310M ENV-310W	0.63" (1.59 cm)	0.31" (0.79 cm)	0.08" (0.19 cm)	2.9" (7.38 cm)	2 g

(from left) ENV-112CM, ENV-112CML, ENV-312-3M, ENV-312-3W

	WIDTH	EXTENDS	EDGE (OD)	RESPONSE	CYCLE	RETRACTION
ENV-112CM	1.81" (4.8 cm)	0.75" (1.9 cm)	0.07" (1.8 cm)	15-100 g (adjustable)	1 s	350 ms (+/- 20 ms)
ENV-312-3M	0.63" (1.59 cm)	0.38" (0.95 cm)	0.07" (1.8 cm)	2 g	175 ms	205 ms (+/- 20 ms)
ENV-312-3W	0.63" (1.59 cm)	0.38" (0.95 cm)	0.07" (1.8 cm)	2 g	175 ms	205 ms (+/- 20 ms)

ENV-110M   *ENV-110RM*   *ENV-116M*

ENV-112CM   *ENV-112CML*   *ENV-112CML illuminated*

STANDARD LEVER

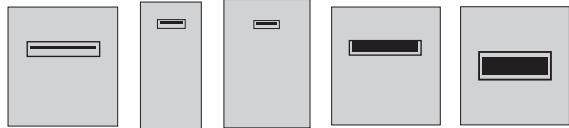**ENV-110M** RAT | STANDARD | 1/4
ENV-310M MOUSE | CLASSIC | 1/2
ENV-310W MOUSE | WIDE | 1/2

- Stainless steel construction
- Mechanical stop protects switch from excessive pressure
- Mouse models referred to as "ultra-sensitive", due to the use of a photobeam rather than a mechanical switch

STANDARD LEVER
w/ROLLED EDGE

ENV-110RM RAT | STANDARD | 1/4

- Stainless steel construction
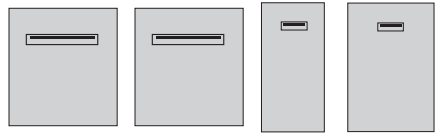- Mechanical stop protects switch from over pressure

(from left) ENV-110M, ENV-310M, ENV-310W, ENV-110RM, ENV-116M

GERBRANDS STYLE EXTRA THICK LEVER

ENV-116M RAT | STANDARD | 1/4

- Stainless steel construction
- Designed in the style of the original Gerbrands lever
- Paddle has a smooth, rounded end to discourage chewing and biting

RETRACTABLE LEVER

ENV-112CM RAT | STANDARD | 1/4
ENV-312-3M MOUSE | CLASSIC | 1/2
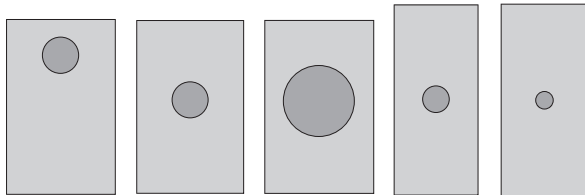**ENV-312-3W** MOUSE | WIDE | 1/2

RETRACTABLE LEVER
ILLUMINATED

ENV-112CML RAT | STANDARD | 1/4

- Stainless steel construction
- Quiet, smooth, reliable operation
- Friction-free pivot
- Sends inputs to report lever response and position
- Requires minimal holding current to control lever position
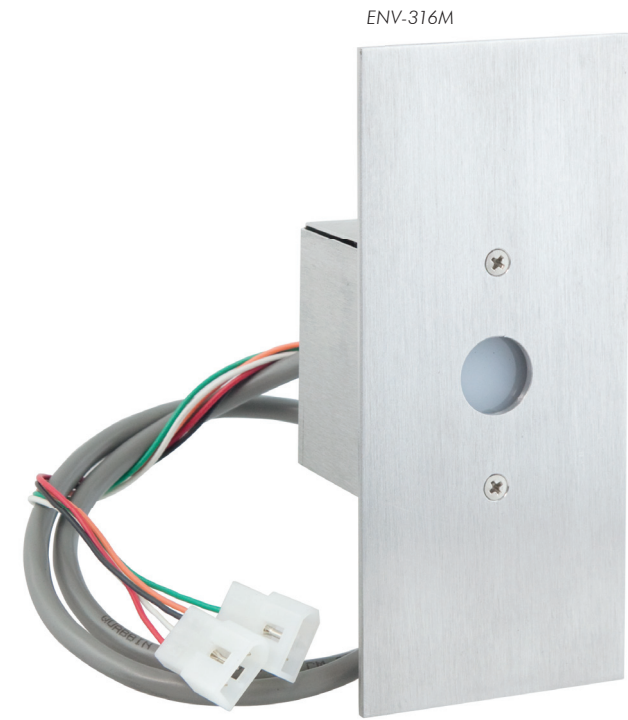- Operate using our 28V DC interface

ENV-312-3W

(from left) ENV-114AM, ENV-119M-1, ENV-119M-2, ENV-316M, ENV-316W

	ACCESS OPENING (OD×D)	POSITION (H)	RESPONSE
ENV-114AM	1" x 0.84" *(2.54 x 2.14 cm)*	3.875" *(9.84 cm)*	N/A
ENV-119M-1	1" x 0.09" *(2.54 x 0.24 cm)*	2.63" *(6.67 cm)*	15 g
ENV-119M-2	2" x 0.09" *(5.08 x 0.24 cm)*	2.63" *(6.67 cm)*	15 g
ENV-316M ENV-316W	0.63" x 0.1" *(1.59 x 0.25 cm)*	2.63" *(6.67 cm)*	3 g

(from left) ENV-114BM, ENV-313M, ENV-313W

	ACCESS OPENING (OD×D)	POSITION (H)	RESPONSE	LIGHT
ENV-114BM	1" x 0.84" *(2.54 x 2.13 cm)*	2.25" *(5.7 cm)*	N/A	585 nm *(yellow)*
ENV-313M ENV-313W	0.5" x 0.406" *(1.27 x 1.03 cm)*	2.59" *(6.6 cm)*	N/A	585 nm *(yellow)*

ENV-316M

NOSE POKE RESPONSE KEY

ENV-114AM RAT | STANDARD | 3/8 | OPAQUE | IR DETECT
ENV-119M-1 RAT | STANDARD | 3/8 | OPAQUE
ENV-119M-2 RAT | STANDARD | 3/8 | OPAQUE
ENV-316M MOUSE | WIDE | 3/4 | OPAQUE
ENV-316W MOUSE | CLASSIC | 3/4 | OPAQUE

- Provides tactile feedback, a fundamental element that helps facilitate shaping and learning
- Plastic target can be backlit
- Infrared detector placed 0.25" *(0.64 cm)* in from the front edge *(ENV-114AM only)*
- Control amplifier operates on 28V DC, produces ground output when beam is broken
- Use with any "switch" input interface module or SmartCtrl

ILLUMINATED NOSE POKE

ENV-114BM RAT | STANDARD | 1/4
ENV-313M MOUSE | CLASSIC | 1/2
ENV-313W MOUSE | WIDE | 1/2

- Yellow stimulus light at the back of the nose poke opening for an enhanced visual cue
- Infrared detector placed 0.25" *(0.64 cm)* in from the front edge
- Control amplifier operates on 28V DC, produces ground output when beam is broken
- Use with any "switch" input interface module or SmartCtrl

NOTE: Other light colors are available upon request

ENV-313M
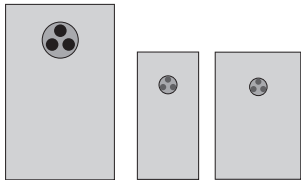
(from left) ENV-114M, ENV-314M, ENV-314W

	ACCESS OPENING (OD×D)	POSITION (H)	RESPONSE
ENV-114M	1" x 0.84" (2.54 x 2.13 cm)	3.88" (9.84 cm)	12-15 g
ENV-314M	0.5" x 0.406" (1.27 x 1.03 cm)	2.59" (6.6 cm)	N/A
ENV-314W	0.5" x 0.406" (1.27 x 1.03 cm)	2.59" (6.6 cm)	N/A

ENV-314M

ENV-131M

ENV-131M-DL

NOSE POKE w/TRIPLE CUE LIGHT

ENV-114M RAT | STANDARD | 3/8
ENV-314M MOUSE | CLASSIC | 1/2
ENV-314W MOUSE | WIDE | 1/2

- Individually controlled red, yellow and green LED lights at the back of the access opening
- Infrared detector placed 0.25" (0.64 cm) in from the front edge
- Control amplifier operates on 28V DC, produces ground output when beam is broken
- Use with any "switch" input interface module or SmartCtrl

## RESPONSE KEY w/LCD STIMULUS DISPLAY

ENV-131M RAT | STANDARD | 3/8

- Create custom images on the computer software, then display them using the Response Key Image Downloader (ENV-131M-DL)
- Comes pre-loaded with 48 image/color combinations:
  - 7 white shapes
    ◦ triangle, circle, plus, square, X, vertical bar, horizontal bar
  - 6 solid background colors
    ◦ black, red, green, blue, yellow, ecru
  - 1 no shape

RESPONSE KEY IMAGE DOWNLOADER

ENV-131M-DL RAT

- Store and display up to 64 custom full color 240x320 px 16-bit bitmap (*.bmp) images
- Med Image Downloader Software (SOF-400, included) enables the creation and import of custom images
- Display images on an unlimited amount of response keys (ENV-131M)
- Connects to PC via USB and the Response Key (ENV-131M) via CAT-5 (both included)
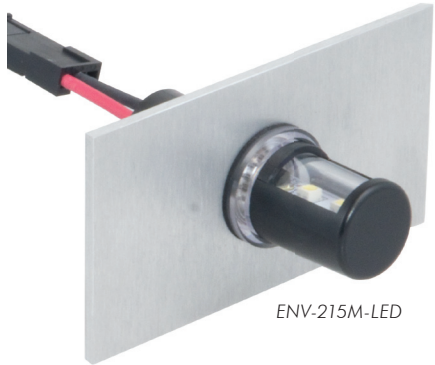
ENV-227M

ENV-215M-LED
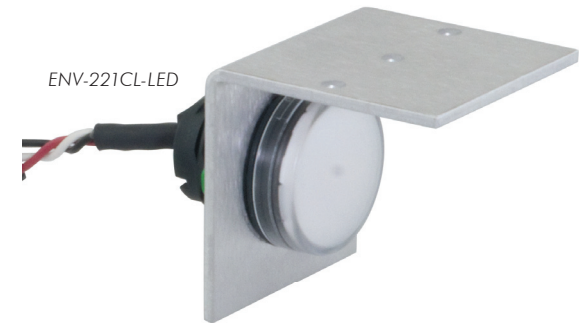
ENV-221CL-LED

INCANDESCENT HOUSE LIGHT w/DIFFUSER

ENV-227M | MOUSE+RAT | STANDARD | 1/8

- Use as a house light or stimulus light
- Light is diffused to illuminate the entire chamber
- Clear acrylic beveled diffuser block
- Comes installed with 40 mA lamp
- Lux Output = 40 lx

LED HOUSE LIGHT

ENV-215M-LED | MOUSE+RAT | STANDARD | 1/8
ENV-315M-LED | MOUSE | CLASSIC | 1/4
ENV-315W-LED | MOUSE | WIDE | 1/4
ENV-221CL-LED | MOUSE+RAT | CEILING MOUNT

- Hood can be rotated to direct light down on the working area or up to reflect light off the ceiling
  - *Note: Modular models only*
- May be wired to the fan circuit to be on all the time or connected to a 28V DC output for computer programmed control
- Lux Output = 55 lx

NOTE: Multiple lights may be needed to fully illuminate larger cubicles (ceiling mounted model only)

color options:

ENV-221M-LED

LED STIMULUS LIGHT

ENV-221AM-LED | RAT | STANDARD | 1/8 | AMBER
ENV-221GN-LED | RAT | STANDARD | 1/8 | GREEN
ENV-221M-LED | RAT | STANDARD | 1/8 | WHITE
ENV-221RD-LED | RAT | STANDARD | 1/8 | RED

- Lens is mounted flush with the metal rim to minimize animal chewing
- Colored lens covers: *(sold separately)*
  - amber, green, white, and red
- Lux Output = 40 lx

ENV-321M

ENV-222M

ENV-229M

(from left) ENV-321DM, ENV-321DW, ENV-321M, ENV-321W   *ENV-222M, ENV-322M, ENV-322W*   *ENV-229M*

	LIGHT (OD)	POSITION
ENV-222M	0.31" (0.79 cm)	0.81" (2.06 cm)
ENV-229M	1.03" (2.5 cm)	0.81" (2.06 cm)
ENV-321DM **ENV-321DW**	0.3" (0.79 cm)	1.41" (3.58 cm)
ENV-321M **ENV-321W**	0.3" (0.79 cm)	1.41" (3.58 cm)
ENV-322M **ENV-322W**	0.16" (0.4 cm)	1.31" (3.33 cm)

TRIPLE LED STIMULUS DISPLAY

ENV-222M | RAT | STANDARD | 1/8
ENV-322M | MOUSE | CLASSIC | 1/4
ENV-322W | MOUSE | WIDE | 1/4

- Three LEDs (red/green/yellow) in a horizontal array
- Expected life = 100,000 hours

LED STIMULUS LIGHT WHITE

ENV-229M | RAT | STANDARD | 1/8

- Mounted flush with metal rim to minimize animal chewing
- Standard white diffuser included
- Expected life = 100,000 hours

LED STIMULUS LIGHT YELLOW

ENV-321DM | MOUSE | CLASSIC | 1/4 | DUAL
ENV-321DW | MOUSE | WIDE | 1/4 | DUAL
ENV-321M | MOUSE | CLASSIC | 1/4 | SINGLE
ENV-321W | MOUSE | WIDE | 1/4 | SINGLE

- Expected life = 100,000 hours

	PURE TONE FREQ RANGE	CLICK FREQ RANGE	WHITE NOISE	RISE/FALL TIME	DURATION	AMPLITUDE	OUTPUTS REQUIRED
ANL-926	0.01-35 kHz *(1 Hz increments)*	1 - 100 Hz	Broadband	1 ms - 1 s *(1 ms increments)*	1 - 65,535 ms *(via Med-PC)*	20 - 100 dB *(Med-PC)*	N/A
ENV-223	1-20 kHz *(15 presets)*	N/A	N/A	Fixed	0.1 ms - infinite, user-defined *(via Med-PC)*	0- 80 dB *(screwdriver)*	4
ENV-230	1-20 kHz *(15 presets)*	10 Hz	Broadband	4.5 µs	0.5 s, 1 s, user-defined *(via Med-PC)*	0 - 100 dB *(screwdriver)*	1

NOTE: speaker sold separately, see p.58

ENV-226 (back)

ANL-950

ENV-226 (front)

ENV-226D (back)

ENV-226D (front)

ENV-230

ANL-926

Audio Stimulus Generator

Calibrate

Speaker

Headphones

ANL-926

ENV-223

LIGHT FADER CONTROLLER
1 CHANNEL / 2 LEVEL

ENV-226 MOUSE+RAT

- Creates a stimulus of either full or reduced intensity
  - Precision screwdriver adjustable control and power regulator circuit
- Requires two separate 28 V DC outputs

NOTE: Not compatible with LED lights

LIGHT FADER CONTROLLER
3 CHANNEL / VARIABLE LEVEL

ENV-226D MOUSE+RAT

- Three independent light intensity dial controls
  - Connect up to two stimulus lamps *(170 mA at 28V DC max, incandescent or LED)*
  - Each channel can be connected to a 28V DC output for computer control
  - Record and repeat settings precisely
- Connect directly to a power supply when used to counterbalance natural preferences in multiple compartment chambers

LUX METER

ANL-950 MOUSE+RAT

- Accurately displays light level in terms of Foot Candles (fc) or Lux (lumens) over three ranges:
  - Fc = 0-200 / 0-2,000 / 0-5,000
  - Lux = 0-2,000 / 0-20,000 / 0-50,000
- Sample modes:
  - Fast (1 second)
  - Slow (2 seconds)
- Generates 1 mV per count analog output readings to be captured by a compatible recording device
- Precision photo diode and color correction filter
- 9V battery and carrying case included

MULTIPLE TONE GENERATOR

ENV-223 MOUSE+RAT

Ideal economical choice for experiments that only need a pure tone, and changing frequency during a session is needed.

- 15 pure tone frequencies: 1, 1.5, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 9, 10, 12, 15, 20 kHz
- Fixed rise/fall to eliminate speaker click or pop when turning tones on or off

MULTIPURPOSE SOUND GENERATOR

ENV-230 MOUSE+RAT

For producing white noise, clicks, or pure tones, and when changing sound type during a session is not needed.

- 15 pure tone frequencies: 1, 1.5, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 9, 10, 12, 15, 20 kHz
- Both the volume and duration of each sound are adjustable between sessions
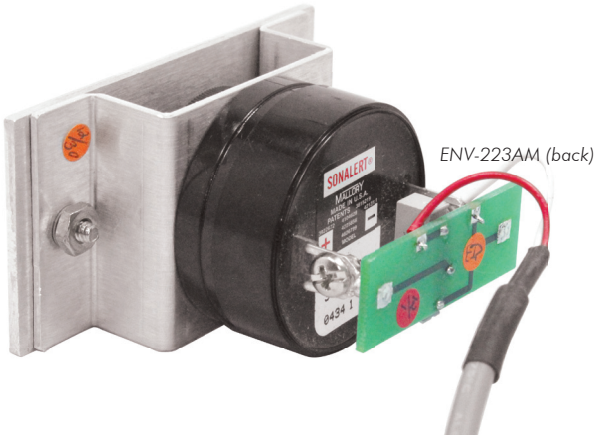
PROGRAMMABLE AUDIO GENERATOR

ANL-926 MOUSE+RAT

For producing white noise, clicks, or pure tones, and when adjusting or changing just about anything during a session is needed.

- Single-width panel, install in our interface cabinets *(see power+control interface brochure)*
- Single microprocessor controller and audio amplifier
- Volume, noise, frequency, and duration of each sound are adjustable mid-session via Med-PC®.

PACKAGE CONTENTS					
A = ENV-225SM		**B = ENV-325SM**	**C = ENV-325SW**		
#	SKU	DESCRIPTION	A	B	C
1	ENV-224AM-3	Cage Speaker *for Rat*	A		
1	ENV-225S	White Noise Amplifier	A	B	C
1	ENV-324M	Cage Speaker *(Classic) for Mouse*		B	
1	ENV-324W	Cage Speaker *(Wide) for Mouse*			C

ENV-223AM (front)

ENV-224AM-3

ENV-223AM (back)

ENV-225S

SPEAKER MODULAR

ENV-224AM-3	RAT	STANDARD	1/4	1-7 KHz
ENV-224BM	RAT	STANDARD	1/4	5-15 KHz
ENV-224DM	RAT	STANDARD	1/4	5-35 KHz
ENV-324M	MOUSE	CLASSIC	1/2	1-5.5 KHz
ENV-324W	MOUSE	WIDE	1/2	1-5.5 KHz

SPEAKER CEILING MOUNT

| ENV-324DM | MOUSE | CLASSIC | 5-35 KHz |
| ENV-324DW | MOUSE | WIDE | 5-35 KHz |

- Plugs into any of our tone generators
  - Use the chart on page 58 to pair with a tone generator based on the frequency range you need to present

ENV-135M

SONALERT MODULE
w/ VOLUME CONTROL

ENV-223AM	RAT	STANDARD	1/4	2,900 Hz
ENV-223HAM	RAT	STANDARD	1/4	4,500 Hz
ENV-323AM	MOUSE	CLASSIC	1/8	2,900 Hz
ENV-323AW	MOUSE	WIDE	1/8	2,900 Hz
ENV-323HAM	MOUSE	CLASSIC	1/8	4,500 Hz
ENV-323HAW	MOUSE	WIDE	1/8	4,500 Hz

- Simple device designed to deliver a single tone frequency.
- Factory set at 65 dB
- Manually adjustable (using a screwdriver) from approximately 60 – 80 dB

RESPONSE FEEDBACK CLICKER

ENV-135M	RAT	STANDARD	3/8
ENV-335M	MOUSE	CLASSIC	1/2
ENV-335W	MOUSE	WIDE	1/2

- A very simple 28V mechanical relay that reliably produces a "click" sound
  - Max Frequency = 90 Hz
- Commonly paired with pellet dispenser for a reward cue

SPEAKER + LIGHT CEILING MOUNT

| ENV-224CM | RAT | CEILING | 1-7 KHz |

Mount a speaker and light assembly *(ENV-224CM)* anywhere inside the SAC. Typically positioned directly above the chamber.

NOTE: Consists of a speaker (ENV-224AM-3) and stimulus light (ENV-221-LED) combined in a single housing

WHITE NOISE AMPLIFIER
+ CAGE SPEAKER PACKAGES

ENV-225SM	RAT	STANDARD	1/4
ENV-325SM	MOUSE	CLASSIC	1/2
ENV-325SW	MOUSE	WIDE	1/2

- Flat frequency response from 10 - 25,000 Hz
- Max Amplitude = 90 dB
  - Adjust using a ten-turn potentiometer
  - Volume factory set to 80 dB
- Generate an auditory stimulus or background masking
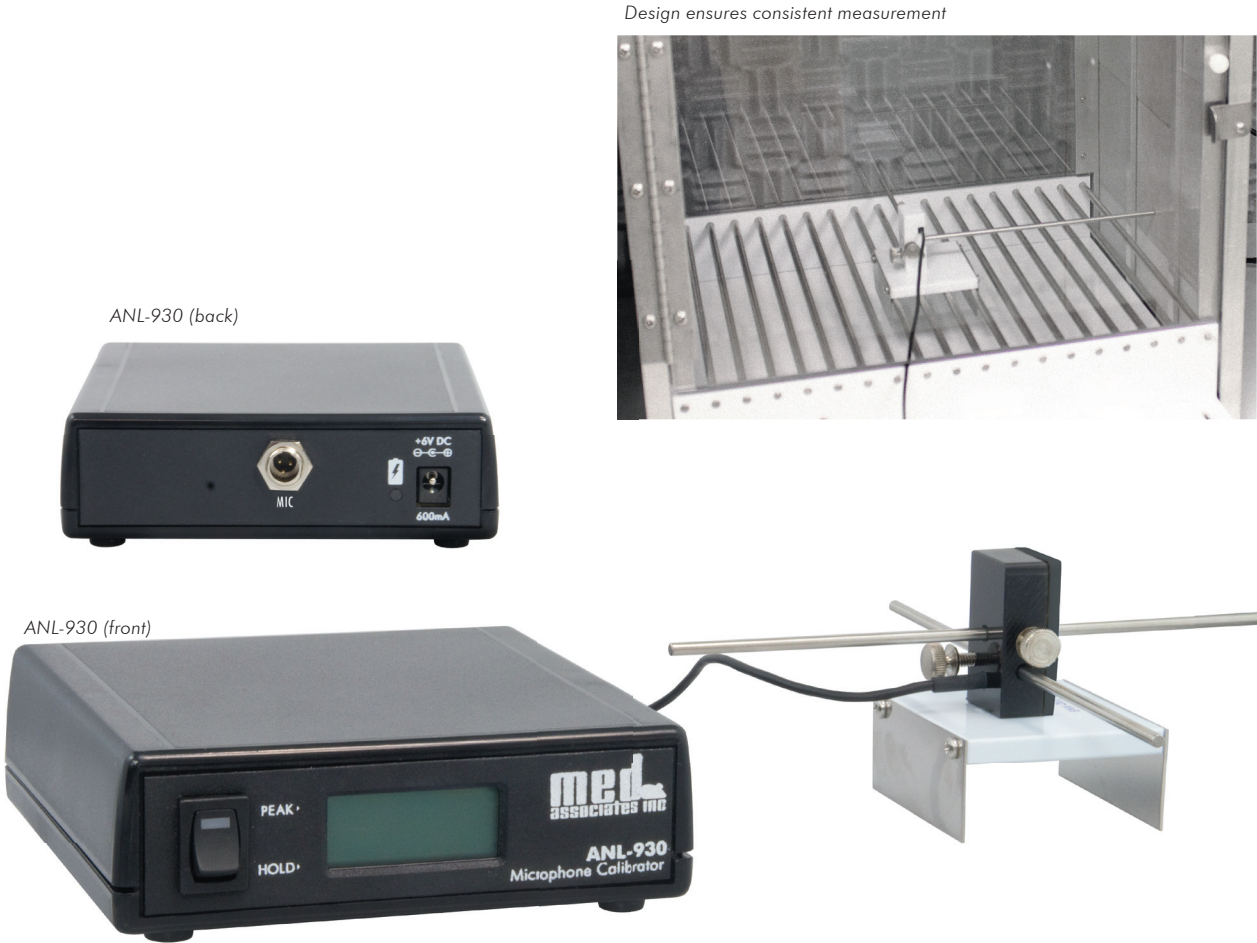- Controlled with 28V DC
- Outputs = 1
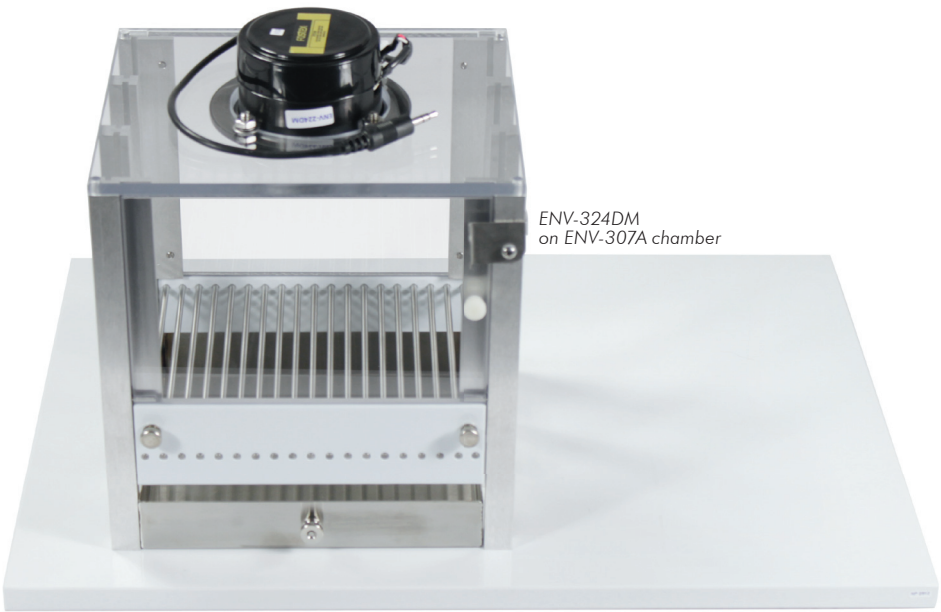
ENV-324DM
on ENV-307A chamber

Design ensures consistent measurement

ANL-930 (back)

ANL-930 (front)

AUDIO DEVICE		
ITEM	**DESCRIPTION**	**FREQ RANGE**
ENV-223	Multiple Tone Generator	1- 20 kHz
ENV-230	Multipurpose Sound Generator	1- 20 kHz
ANL-926	Programmable Audio Generator	0.01 - 35 kHz

AUDIO DEVICE & SPEAKER PAIRING GUIDE

Once you decide on which tone generator best suits your needs, use the chart below to pick a speaker based on the frequency range you need to present.

SPEAKERS				
ITEM	**DESCRIPTION**	**MOUNT TYPE**	**FREQ RANGE**	**SENSITIVITY**
ENV-224AM-3	Modular cage speaker	standard rat panel	1–7 KHz	10 dB down @ 700 Hz and 7.5 KHz
ENV-224BM	Modular cage horn tweeter	standard rat panel	5–15 KHz	10 dB down @ 2 and 18 KHz
ENV-224CM	Speaker w/light & enclosure	ceiling mount	1–7 KHz	10 dB down @ 700 Hz and 7.5 KHz
ENV-324M	Modular cage speaker	classic mouse panel	1–5.5 KHz	15 dB down @ 700 Hz and 6.5 KHz
ENV-324W	Modular cage speaker	wide mouse panel	1–5.5 KHz	15 dB down @ 700 Hz and 6.5 KHz
ENV-224DM	Modular cage super tweeter	standard rat panel	5–35 KHz	10 dB down @ 3 KHz and 45 KHz
ENV-324DW	Top mount super tweeter	wide mouse chamber	5–35 KHz	10 dB down @ 3 KHz and 45 KHz
ENV-324DM	Top mount super tweeter	classic mouse chamber	5–35 KHz	10 dB down @ 3 KHz and 45 KHz

SOUND PRESSURE LEVEL MEASUREMENT PACKAGE

ANL-930 MOUSE+RAT

- Device provides detailed measurements of either noise or pure tone signals
  - When measuring pure tone, it shows amplitude and frequency
  - When measuring any other sound, it shows noise and sound pressure level of frequency range
- We have made a considerable R&D investment to offer this product at a fraction of the cost of typical sound pressure level measurement equipment
- Offers a level of stimulus verification and calibration unavailable with sound level meters or other startle reflex systems

- The unique design of the included microphone holder ensures consistent microphone placement from chamber to chamber and get readings outside of the cubicle for a true measurement
- The sound level meter displays the sound level in dB as well as the frequency in real time
- Rechargeable 18650 3500mAh 3.7V lithium-ion battery with an average life of 8 hours

SPECIFICATIONS

Dynamic Range = 60 – 120dB

Frequency Range = 100 – 70,000 Hz

SCAN
FOR PDF