

# **AVERSIVE STIMULATOR CURRENT TEST PACKAGE**

ENV-421 AMMETER

USER'S MANUAL

**DOC-314**

**Rev. 1.0**

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## CHAPTER 1 | OVERVIEW

The ENV-421 Aversive Stimulator Current Test Package (Ammeter) is designed to show the amount of current produced by an aversive stimulator. The range of the ammeter is .05 mA to 6.50 mA. Currents below .05 mA are displayed as 0.0 mA to avoid incorrectly reading noise as a stimulus.

*Figure 1.1 Front Panel Layout*



**ON / OFF switch:** Turns the device on / off. The green LED on the switch is lit when the device is on.

**Peak and Hold:** **Peak** shows the RMS (root mean square) current corresponding to the aversive stimulator setting measured in milliamps. It is the metric used by stimulators. The **Hold** line shows the maximum peak value of the most recent ~10 seconds of measurements.

**Battery Status:** The battery level status will be displayed on the screen when the ENV-421 is turned on; if the power is below 10% the green LED on the power switch will flash.

**Included Accessories:** +6VDC power adapter, alligator clips for connecting to the grid rods and a rechargeable battery (**Battery included in domestic orders only**) as shown in **Figure 1.2**.

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**NOTE:** Do not use a +6VDC power adapter from any other device

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*Figure 1.2 +6VDC Power Adapter, Alligator Clips and Rechargeable battery*



## CHAPTER 2 | INSTRUCTIONS

### Operation

Connect the alligator clips to the grid rods, plug the ENV-421 into the wall outlet and turn the unit on. If no battery is installed, **BATT NOT DETECTED** will be displayed. If so, refer to Replacing the Battery section on **page 5** for battery installation instructions. Batteries will **NOT** be shipped installed in the unit.

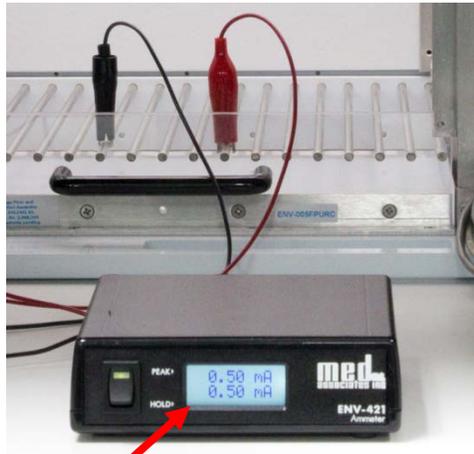
**IMPORTANT:** Do not use grid rods 9 apart. Use adjacent or nearby rod as your test subjects will most likely stand.

Ensure the stimulator you are testing is set to “**Dummy Load – Out**”. Next validate the current by comparing the current reading on the stimulator with the Peak/Hold reading on the ENV-421. See **Figure 2.2**

*Figure 2.2 Connect the ENV-421 to your grid floor using the clip leads*

*Dummy Load set to IN shows Output Current on ENV-414S*





Dummy Load set to **OUT** shows mA on ENV-421 display

### Charging

Connect the +6 VDC adapter to the ENV-421, and plug the +6 VDC adapter into a standard 120v (varying by country) wall outlet to charge. Battery life is approximately 30hrs and charging time is 7hrs, from empty to full. The amber charging light will turn off when charging is complete.

Figure 2.1 Connect the ENV-421 to a standard 120v wall outlet and connect alligator clips

To Alligator Clips – See figure 1.2



To +6VDC Adapter - See figure 1.2

The Amber LED will be lit solid while charging and off when finished charging. The current battery life can be seen by turning the unit on. If the amber LED is blinking, the battery has stopped charging and timed out. If this occurs unplug the unit and then plug it back in.

**Troubleshooting current variations**

If the ENV-421 is reading a current lower than the output setting, perform the following troubleshooting steps.

1. Verify good clip contact, reconnect the alligator clips to two different adjacent rods
2. Clean the grid floor, animal waste may travel to the far ends of the floor rods and create electrical resistance.
3. Clean the quick connect harness contacts with a cotton swab and alcohol, a piece of ScotchBrite scouring pad or a pencil eraser.

Keep in mind the display on the aversive stimulator (e.g. ENV-414S) does not include the resistance of the two DB-9 connectors, cable to grid harness, and grid harness to grid floor. The ENV-421 will be including these resistances in its measurement.

If the ENV-421 reads a current higher than the output setting, or a lower than expected value after performing the above steps, adjust the current output settings until the ENV-421 shows the desired output value.

## Replacing the Battery

The ENV-421 battery is designed to last the lifetime of the unit, but is replaceable if needed. Battery type 18650 3.7v lithium-ion is recommended when replacing the rechargeable battery.

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**NOTE: Do not** store the device with an empty battery as this may shorten the life span of the battery

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Figure 2.3 Panasonic NCR 18650GA 3.7v

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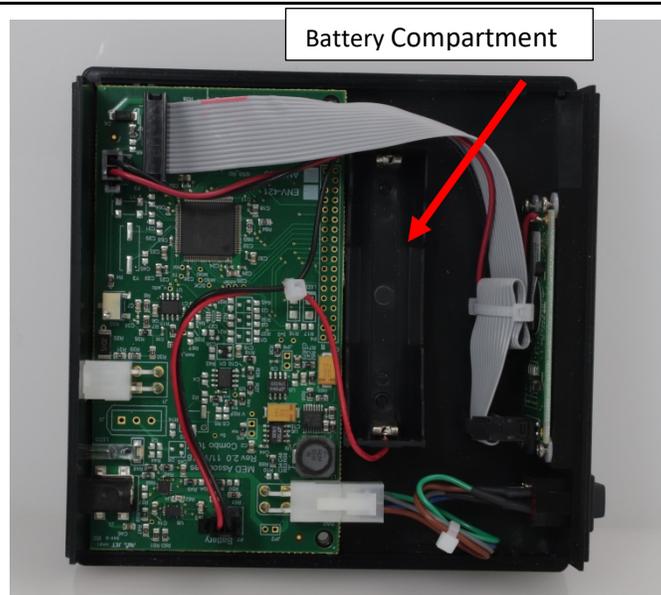
**NOTE:** Pictured sample batteries for visual reference only. Actual battery may look different.

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Make sure the unit is turned off **AND** not plugged into the wall before proceeding. Remove 2 screws from bottom of the ENV-421. Turn over then separate the top and bottom of the ENV-421. Remove the old battery and replace with the new 18650 lithium-ion battery. **Take care to ensure battery is installed with proper orientation. Battery compartment has the + and – marked. If those are too hard to see, put the positive side with the red wire and the negative with the black wire.** Reassemble unit. Discard the old battery in accordance with your local solid waste authority rules.

Figure 2.4 Battery compartment internal view

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## **APPENDIX A | CONTACT INFORMATION**

Please contact Med Associates, Inc. for information regarding any of our products.

For Technical questions, email [support@med-associates.com](mailto:support@med-associates.com).

For Sales questions, email [sales@med-associates.com](mailto:sales@med-associates.com).

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