

# **ELECTRO** **BRAID**™ **FENCE** Patented

## **Fence Minder™ Manual**

For Version 3.1

3rd Revision: April 1, 2007

**READ THE FOLLOWING INFORMATION CAREFULLY**



**Toll Free: (888) 430-3330**  
**Fax: (902) 749-0513**  
**Email: [info@electrobraid.com](mailto:info@electrobraid.com)**  
**[www.electrobraid.com](http://www.electrobraid.com)**

ElectroBraid Fence Limited  
236 Water Street, Box 19  
Yarmouth, Nova Scotia  
Canada, B5A 4P8

## **ElectroBraid's™ Commitment to Safety**

Congratulations on your decision to purchase an ElectroBraid Fence Minder™ for your horses.

The ElectroBraid™ Fence System is designed to minimize injuries and secure horses safely. There are no sharp points or hard edges; no boards to break or splinter.

Most severe fence injuries happen when a horse panics, or is chased by another horse, and runs 'blind' into a rigid fence. ElectroBraid™ is a forgiving fence because it is resilient, like a boxing ring. ElectroBraid™ tends to bounce the horse right back with little harm to horse or fence!

ElectroBraid™ is a psychological barrier. We advise our customers to always maintain at least 5,000 volts and good electrical grounding to ensure their horses receive a significant electric shock - - not just a "bee-sting". A shock from an approved electric fence energizer is not harmful because the shock is low amperage for a tiny fraction of a second (similar in duration to a static shock from your TV set). A UL or CSA approved energizer won't harm a two-year-old child or newborn foal.

Provided you verify your fence is properly grounded, and ensure your fence is wired correctly and in good working order by regularly checking your voltage with a digital voltmeter (all readings should be a minimum of 5,000 volts to the soil), your Fence Minder™ will give you the peace of mind of knowing that your ElectroBraid™ fence is keeping your horses safe.

Your ElectroBraid Fence Minder™ will continuously check to make sure your fence is functioning properly. ***If the fence is properly grounded and wired correctly***, your Fence Minder™ will warn you, day or night, if it detects a significant voltage drop. If a horse is pressured or panicked and contacts its fence for more than three or four seconds, your Fence Minder™ will shut off your energizer to stop further electric shocks; and immediately alert you by siren and/or by auto-dialing your pre-programmed phone numbers.

**WARNING: If you have poor grounding, poor connections or broken wires, your Fence Minder™ will NOT be able to detect problems on the fence line.**

Injuries with ElectroBraid™ are very rare. If any incident occurs, please call 1-888-430-3330 so we can help prevent a future injury.

**Our Company Mission is to Build Safe Fences for Horses**

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

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### **IMPORTANT INFORMATION** **BEFORE YOU BEGIN:**

If you have purchased your Fence Minder™ and energizer directly from ElectroBraid Fence Limited or have informed us of the ElectroBraid™ Energizer's make and model you are using at the time of purchase, your Fence Minder™ has been configured for your specific energizer at the factory. If this is not the case or you connect a different energizer than the one you described to us, then you will have to see APPENDIX A: CHANGING DIP SWITCH SETTINGS, section A2.2 "SETTING THE ENERGIZER VOLTAGE COUNT AUTOMATICALLY" in order to configure your Fence Minder™ to work with another model energizer.

***WARNING: The Fence Minder™ may not work with all makes and models of energizers on the market. We can only guarantee the Fence Minder's performance in use with ElectroBraid™ energizers.***

Note: You should always have a siren connected to your Fence Minder™. Never rely solely on an auto-dialer in case of malfunction. Remember, if the phone line in your barn is the same phone line in your house, the auto-dialer will not be able to call your home as it will be occupying the same line.

The Fence Minder™ will not function if your fence is not wired correctly and operating properly. **The Fence Minder™ does not replace the need to regularly test your fence as outlined in the ElectroBraid™ Fence Installation Manual.**

## **2. GENERAL DESCRIPTION**

Your Fence Minder™ is designed to monitor the operation of your ElectroBraid™ Fence System.

***Provided your fence is properly grounded and wired correctly***, your Minder™ will alarm and turn off the power to your energizer:

1. If the voltage on your fence drops suddenly for three seconds or more, such as if a horse got tangled in your fence;
2. If a tree falls on the fence; or
3. If there is a sudden loss of energizer output power.

Your Fence Minder™ will also alarm, but not turn off the energizer, if the fence voltage drops gradually, but not suddenly, below a pre-set voltage.

Your Minder™ is programmed to minimize false alarms from rain or snow.

Your Fence Minder™ can be powered by mains power (110 volts AC/60 Hz) or by battery or solar power (8 - 16 volts DC). Up to three alarm devices can be connected. You can install a siren wired for continuous or intermittent signaling. You can also add a flashing light and telephone auto-dialer.

To keep power on your fence during a general power failure, and keep your Fence Minder™ operating, you can install a battery back-up system by simply using a battery powered energizer connected to a battery that is permanently connected to a battery trickle charger.

Your Fence Minder™ is easy to install. Read this Manual in conjunction with the ElectroBraid™ Installation Manual.

***Finally, it is most important for you to use your Digital Voltmeter to regularly check the voltage on your ground system, and along your fence. All readings should be a minimum of 5,000 volts to the soil.***

Good voltage and good grounding prevents accidents!

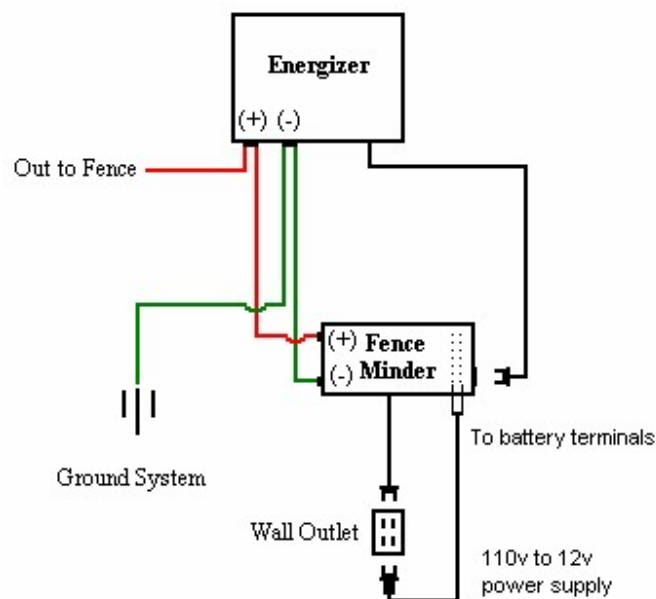
**Please call us at 1-888-430-3330 for more information, or visit [www.electrobraid.com](http://www.electrobraid.com)**

### 3. INSTALLATION

#### 3.1 Installation with a 2.5 Joule ElectroBraid™ Energizer

**CAUTION: To avoid an accidental shock, do not power the Fence Minder™ or the energizer until you have finished all wiring!**

1. First, wire your fence and your gates as directed in the ElectroBraid™ Installation Manual. Follow the instructions for Winter Wiring if you expect to have horses out in snow higher than your bottom strand.
2. Mount the Fence Minder™ beside the energizer, indoors or inside a weatherproof container, away from flammable material and out of reach of children. Do not hang the Fence Minder™ or other alarm devices by their connecting wires.



3. Now connect the terminals of your Fence Minder™ to the terminals of your energizer, positive to positive and negative to negative.
4. Plug the ElectroBraid 2.5 Joule Energizer into your Fence Minder™ (but do not power the Fence Minder™ until all wiring is complete).
5. Up to three external alarm devices can be activated by your Fence Minder™. These may be a siren, a light and/or a telephone auto-dialer. Attach a positive lead from the positive (+) terminal on the alarm device to the positive (+) terminal on the Fence Minder™. Attach a negative lead from the negative (-) terminal on the alarm device to the negative (-) terminal on the Fence Minder™. When hooking up an Auto-dialer, follow the manufacturer's instructions. For continuous siren alarm, connect the siren to the "light" alarm terminal on the Fence Minder™. For intermittent siren alarm, connect the siren to the "siren" alarm terminal. Note that two alternative, intermittent alarm settings are available: see Appendix A – Changing dip switch settings.
6. Plug the 110 volt power cord of the Fence Minder™ into a wall outlet.
7. Ensure the two wires of the power supply are firmly attached to the battery terminals on the Fence Minder™ (polarity is not important) and plug into a wall outlet.
8. **To Start of the Fence Minder™ operation:** Press and hold the Reset Button until you hear the Minder™ reset, and then release the button. The Fence Minder™ will go through a 60 second

evaluation cycle while it checks the status of the fence. The green light should show solid green, which means the power is on. The yellow light will start solid yellow until it begins to flash in rhythm with the pulse from the energizer. The red light will remain off.

**NOTE:** The cover of the Fence Minder™ must be in place or it will not function.

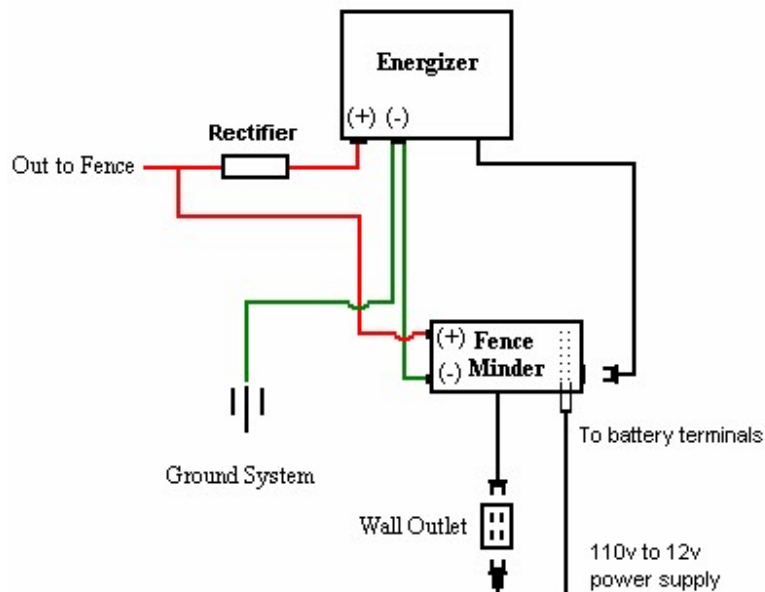
### 3.2 Installation with a 6 or 11 Joule ElectroBraid™ Energizer

**NOTE:** In order for the Fence Minder™ to operate properly with a 6 or 11 Joule ElectroBraid™ Energizer, you must install an ElectroBraid™ Rectifier part # 511283.

**NOTE:** The 11 Joule Energizer has two sets: **LOW** and **HIGH**. The energizer must be set on **HIGH**.

**CAUTION:** To avoid an accidental shock, do not power the Fence Minder™ or the energizer until you have finished all wiring!

1. First, wire your fence and your gates as directed in the ElectroBraid™ Installation Manual. Follow the instructions for Winter Wiring if you expect to have horses out in snow higher than your bottom strand.
2. Mount the Fence Minder™ beside the energizer, indoors or inside a weatherproof container, away from flammable material and out of reach of children. Do not hang the Fence Minder™ or other alarm devices by their connecting wires.



3. Connect one of the rectifier's leads to the positive terminal on the Energizer.
4. Connect the positive terminal of your Fence Minder™ and the lead-out wire to the fence to the other lead of the rectifier using the marette supplied.
5. Connect the negative terminal of your Fence Minder™ to the negative terminal of the energizer.
6. Plug the energizer into your Fence Minder™ (but do not power the Fence Minder™ until all wiring is complete).
7. Up to three external alarm devices can be activated by your Fence Minder™. These may be a siren, a light and/or a telephone auto-dialer. Attach a positive lead from the positive (+) terminal on the alarm device to the positive (+) terminal on the Fence Minder™. Attach a negative lead from the alarm device to the negative (-) terminal on the Fence Minder™. When hooking up an Auto-dialer,

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

follow the manufacturer's instructions. For continuous siren alarm, connect the siren to the "light" alarm terminal on the Fence Minder™. For intermittent siren alarm, connect the siren to the "siren" alarm terminal. Note that two alternative, intermittent alarm settings are available: see Appendix A – Changing dip switch settings.

8. Ensure the two wires of the power supply are firmly attached to the battery terminals on the Fence Minder™ (polarity is not important) and plug into a wall outlet.
9. Plug the 110 volt power cord of the Fence Minder™ into a wall outlet.
10. **To Start of the Fence Minder™ operation:** Press and hold the Reset Button until you hear the Minder™ reset and then release the button. The Fence Minder™ will go through a 60 second evaluation cycle while it checks the status of the fence. The green light should show solid green, which means the power is on. The yellow light will start solid yellow until it begins to flash in rhythm with the pulse from the energizer. The red light will remain off.

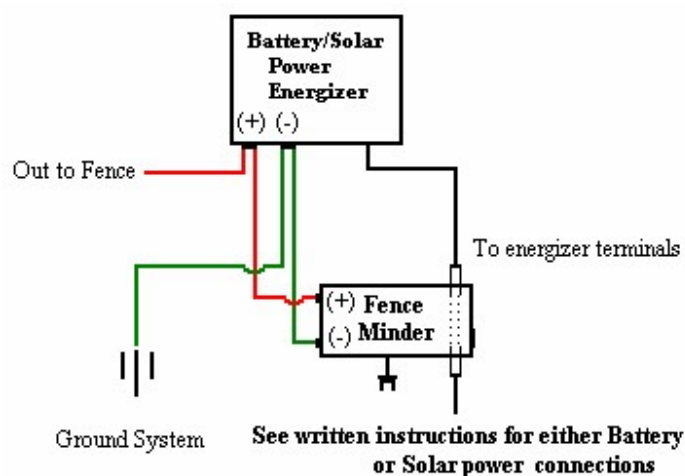
**NOTE:** The cover of the Fence Minder™ must be in place or it will not function.

### 3.3 Using Battery or Solar Powered Energizers

**NOTE:** Mains Power is strongly recommended because it is much more reliable, much less expensive and much less trouble than solar/battery power.

**CAUTION:** To avoid an accidental shock, connecting electrical power from the source should be the last step; after all other devices have been connected.

1. Connect the Fence Minder to the energizer as illustrated



#### Battery Power:

1. Connect the red wire from the "Battery positive (+)" terminal of the Fence Minder™ to the positive (+) terminal on the battery.
2. Connect the black wire from the "Battery negative (-)" terminal of the Fence Minder™ to the negative (-) terminal on the battery.

**NOTE:** You will need a Deep Cycle Marine or RV battery rated at 85 amp hours or more. This battery will require periodic maintenance and charging AT LEAST ONCE A MONTH. Alternatively, a battery trickle charger may be attached (follow the manufacturer's instructions). Even so, an equalization charge should be applied by your local automotive repair shop, approximately every 12 months.

## **Solar Energizer :**

1. **First:** Connect the red wire from the “Battery positive (+)” terminal of the Fence Minder™ to the positive (+) terminal on the battery.
2. Connect the black wire from the “Battery negative (-)” terminal of the Minder™ to the negative (-) terminal on the battery.
3. **Second:** Connect a solar panel directly to the battery (red for positive, black for negative).

**NOTE:** Some Solar Energizer manufacturers design the energizer and the solar panel as a single unit. These energizers CAN NOT be connected to the Fence Minder™ since the wiring of the solar energizer is internal.

**NOTE:** We recommend a 2 joule solar energizer and 10-watt solar panel as a minimum. These are expensive. Please call us at 1-888-430-3330 to discuss.

*See the ElectroBraid™ Installation Manual for further details regarding Solar Energizer installation.*

## **4 TO START THE FENCE MINDER™ OPERATION**

If an alarm is triggered when you power up the Fence Minder™, press and hold the Reset Button until you hear the Minder™ reset, then release the button.

The Fence Minder™ will go through a 60 second evaluation cycle while it checks the status of the fence. The green light should show solid green, which means the power is on. The yellow light will start solid yellow until it begins to flash in rhythm with the pulse from the energizer. The red light will remain off.

**NOTE:** The cover of the Fence Minder™ must be in place or it will not function.

## **5. TESTING YOUR FENCE MINDER™ INSTALLATION**

### **5.1 Good Grounding is of Critical Importance**

A horse respects an electric fence because he gets a painful shock when he touches it. If the shock is not sufficient, the horse may not respect the fence.

Electricity flows from the energizer through the fence to any animal touching the fence. The electric circuit is completed when the current goes through the animal into the soil (the "ground"), and through the soil back to the ground rods which are connected to the energizer. If the soil conducts electricity poorly, the animal may get very little shock, even though your voltmeter may read over 5,000 volts between the “hot” and “cold” strands.

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

Sandy soil, dry soil and/or frozen soil are notably poor conductors.

Once your Fence Minder™ is operating, you need to test for consistent good grounding along the length of your fence.

## 5.2 Testing Grounding along your Fence Line

First, do the basic fence voltage tests to ensure your fence is properly energized and that your ground system is working properly (see the ElectroBraid™ Installation Manual). Your Digital Volt Meter should read between 5,000 and 10,000 volts throughout these tests and **most importantly, read over 5000 volts from the hot strands to the soil itself**. Your energizer should be rated for an output of no less than 2 joules.

In most fence installations, grounding conditions are fairly uniform. Soil along the entire length of the fence line is usually similar to the soil around the energizer ground system. Even so, you must verify that the sensitivity of your Fence Minder™ is at the correct levels by testing the soil at different points along your fence line with your Fence Minder Test Probe™.

It helps to have two people: one to test along the fence line while the other remains beside the Fence Minder™ to press the re-set button each time the alarm is triggered.

Select high, dry areas to test. Use the Fence Minder Test Probe™ to connect a "hot" line of your fence to the soil (the Test Probe simulates a horse touching the fence). First, insert the probe end of the Fence Minder Test Probe™ into the ground (this is the end with the right angle bend), then touch the other end of the Test Probe™ to one of the positive (hot) strands of Braid™. - - if the grounding is good, the Minder™ will alarm. Reset the Fence Minder™ and continue testing.

**CAUTION:** always ground the probe before you touch the "hot" line (instead of touching the "hot" line first), to avoid an accidental shock.

The Minder™ should alarm after three (3) seconds. When the Minder™ alarms, as it should if the ground is good, reset the Minder™ and continue testing along the fence line. Pick any place that has an apparent change in soil conditions or where the soil is higher in elevation than the energizer's ground system.

Make sure the system has been up and running for at least 60 seconds before starting each test (the yellow light will blink in rhythm with the energizer). On each test, apply the Test Probe™ for at least six (6) seconds.

**These simple tests will assure you that your ElectroBraid™ fence is properly installed. Please monitor your fence on a regular schedule and with each change of season.**

**If you have any problems, call us at 1-888-430-3330 and let us help you.**

If the Fence Minder™ fails to alarm, you either have 1) a localized grounding problem or 2) you need to adjust the sensitivity of the Fence Minder™:

*If you have a **minimum of 5000V** between a hot strand of Braid™ and the soil at the same location that the Fence Minder Test Probe™ failed to cause the Fence Minder™ to alarm, then you will need*

*to adjust the sensitivity of the Fence Minder™ down as explained in “Appendix A - Changing Dip Switch Settings”.*

***If not...***

*If there is less than 5000V between the hot strand of Braid™ and the soil, then you need to improve the grounding of the fence as follows:*

Step 1: Improve the overall energizer ground system: Add one or more ground rods to the ground system anywhere along the fence line, especially if you can find permanent moist earth. Connect these ground rods to the grounded strand of Braid™.

Step 2: If the grounding problem is due to rock, loose stones or boulders, or very sandy soil, which cannot be corrected by Steps 1, you have identified a problem - - your horses could be insulated from getting any shocks. To ensure safe and effective operation, you may have to relocate a portion of your fence away from the problem soil.

NOTE: If your soil dries out or becomes frozen, your grounding can become a problem. Check the voltages frequently with your Digital Voltmeter. Add more ground rods if required.

It is IMPORTANT to retest your fence system's grounding as the seasons change, particularly during the first 12 months. Grounding along the fence line may be good in the spring, but poor in hot summer months (when the soil is dry) or in cold winter months (when the soil is frozen).

**If you have a grounding problem you can't fix, call 1-888-430-3330 and let us help you.**

## **6. SUMMARY OF FENCE MINDER™ FEATURES AND OPERATION**

The Fence Minder™ incorporates the following features:

- Disconnects the energizer power supply in case of a detected accident.
- Activates one or more alarms on 4 independent communication channels:
  - A red LED light on the Fence Minder™.
  - An intermittent or continuous Alarm Siren (12V DC).
  - A Flashing Light (12V DC) with continuous operation until reset.
  - An RS232 serial communication port for communication devices such as a Telephone Auto-dialer.
- Alarm Types

**Type 1 Alarm** - A detected Sudden Voltage Drop will **ALWAYS** Disconnect Power to the Energizer. If this results from a horse contacting the fence for more than three seconds, all shocks will cease immediately. A Type 1 Alarm will also occur if an electrical conductor falls on the fence and touches both fence and soil simultaneously, or if a tree-fall brings a hot strand of Braid™ in direct contact with the grounded strand or the soil.

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

**Type 2 Alarm** - If the voltage drops **Gradually** below the pre-set minimum voltage, the Fence Minder™ will alarm but will **NOT** disconnect power to the energizer. A Type 2 Alarm protects against loss of energizer output power or substantially increased electrical resistance caused by excessive weed growth in contact with the fence.

**WARNING: If you have poor grounding, poor connections or broken wires, your Fence Minder™ will NOT be able to detect problems on the fence line.**  
Alarm Operation depends on good grounding and correct fence wiring.

- \* A siren may be set for continuous alarm, or for intermittent operation to comply with local noise pollution regulations (either a 2 minute Siren Alarm every 15 minutes, or a 1 minute Siren Alarm every 30 minutes - see Appendix A). A flashing light can signal an alarm condition. An auto-dialer and telephone service can provide an immediate phone alert to your home, work or neighbor.
- \* The Reset Switch can be used at any time to restart operations and to reset an alarm, (if pressed for less than a second). If pressed for more than a second (and then released), the Reset Switch will cycle through any connected alarm devices to verify their correct operation - each alarm device will come on for two seconds and then shut off.
- \* When first turned on, the Fence Minder™ takes 60 seconds to compare the actual fence voltage to pre-set minimum conditions. The Minder™ then continuously monitors and compares the fence voltage to a moving average. If the Minder™ is restarted following an alarm, the Minder™ will, again, first take about 30 seconds to verify the fence meets minimum conditions. If the alarm re-occurs, troubleshooting will be required.

## **7. TROUBLESHOOTING GUIDE**

### **7.1 Resetting your Fence Minder™ after an Alarm:**

First, rectify the fault that caused the alarm, e.g. a tree falling on the fence.

Press the Reset Button on the Fence Minder™ for less than a second if you do not need to verify the performance of accessories.

Press the Reset Button for more than a second (and then release it), if you want to check each of the alarm devices installed.

### **7.2 Interpreting the green, red and yellow LED button lights**

Trouble free operation is indicated on the Fence Minder™ by a continuous green LED light and a pulsing yellow LED light with all external alarm indicators turned off.

A Type 1 Alarm can be identified by a continuous red LED light.

A Type 2 Alarm can be identified by continuous red LED light and a long On/short Off pulsing yellow LED light.

If the cause of failure is not obvious, a careful inspection of the fence will be required. Check for electrical integrity, poor connections, lightning damage, or an object touching the fence.

### **7.3 False Alarms**

If false alarms become a pattern increase the Sensitivity Dip Switch Settings (see Appendix A).

### **7.4 Fence Voltage less than 5,000 volts**

Step1. Disconnect the energizer from the fence and check its output voltage. Check for a blown fuse. Replace the energizer if it is not putting out 5,000 to 10,000 volts.

Step2. Look for an electrical short on the fence, or a series of poor connections.

- Check the connecting leads near the energizer with your DVM and then check each of the jump leads at each gate.
- If you listen carefully, you may hear the snapping sound of "arcing" at poor connections or from broken copper wire conductors along the Braid™.
- At night you can see sparking from electrical arcing. Mark any arcing points so you can fix problems in daylight.

Step3. Remove any weeds, bushes or debris which touches the fence.

Step 4. Follow the testing and diagnostic procedures in your Electrobraided Fence Installation Manual.

Please do not hesitate to call our Toll Free, 7 day a week (7am-7pm Central Time), Technical Support at 1-888-430-3330.

### **7.5 Ground Voltage more than 300 volts**

Step1. Check for anything, including tall weeds or bushes that might electrically connect a hot strand of Braid™ to your grounded strand.

Step 2. Wet the soil around your ground rods, let the water soak in and then re-test the voltage. If wetting reduces the voltage to below 300 volts, you need to add ground rods to improve the grounding system. Look for permanently moist soil anywhere along the fence line and connect the new ground rods to your grounded strand of Braid™.

## **APPENDIX A: CHANGING DIP SWITCH SETTINGS**

**NOTE: ALL DEFAULT SETTINGS ARE FOR THE ELECTROBRAID 2.5 JOULE ENERGIZERS. FOR THE CORRECT SETTINGS FOR OTHER ELECTROBRAID ENERGIZERS, CONTACT US AT 1-888-430-3330.**

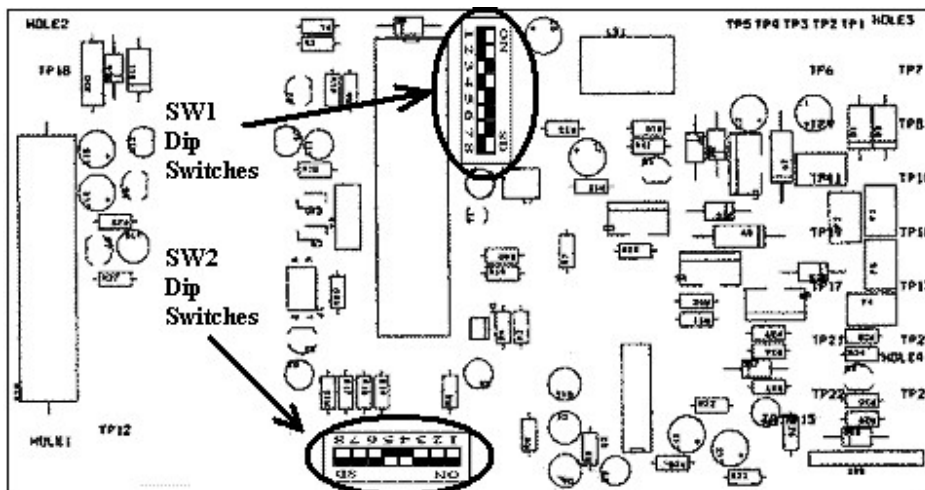
**NOTE: The Fence Minder WILL NOT FUNCTION with out the cover in place.**

### **A.1 LOCATION OF SWITCHES:**

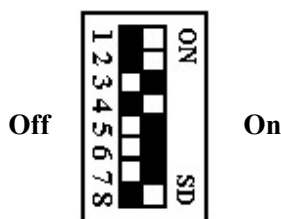
*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

If changes in Dip Switch Settings are required, you must first disconnect the power supply. Then, remove the back cover and you will see two banks of Dip Switches (8 switches each) located on the main electronic board. These are SW-1 and SW-2 (see diagram).

**Board Schematic – to Locate Dip Switches**



**A.2 DEFAULT SETTINGS FOR SWITCH BANK SW-1 (oriented per the schematic):**



Note: The white block indicates the position of the switch.

**A.2.1 SENSITIVITY**

The percentage variance of the fence voltage pulses at animal contact (Alarm Type 1) is set using the three dip switches SW1-1, SW1-2 and SW1-3.

| Setting | (Low) | .          | .   | .   | .   | .   | .   | (High) |
|---------|-------|------------|-----|-----|-----|-----|-----|--------|
| SW1-1   | Off   | <b>Off</b> | Off | Off | On  | On  | On  | On     |
| SW1-2   | Off   | <b>Off</b> | On  | On  | Off | Off | On  | On     |
| SW1-3   | Off   | <b>On</b>  | Off | On  | Off | On  | Off | On     |
| Value   | 1%    | <b>2%</b>  | 3%  | 4%  | 5%  | 6%  | 7%  | 99%    |

***Initial default setting is 2%***

If Alarm Type 1 is false-triggered:

Sensitivity must be re-set one step up.

If insufficient Sensitivity is determined, re-set one step down.

**A.2.2 ENERGIZER VOLTAGE COUNT**

The Count of the voltage pulse is different for each energizer and depends on make and model. The value is set using SW1-4, SW1-5 and SW1-6. The “Low Voltage Alarm” (Alarm Type 2) is triggered when the fence voltage Count relative to ground falls below 30% of the normal voltage Count.

|         |        |     |     |     |            |     |     |        |
|---------|--------|-----|-----|-----|------------|-----|-----|--------|
| Setting | (Low)  | .   | .   | .   | .          | .   | .   | (High) |
| SW1-4   | Off    | Off | Off | Off | <b>On</b>  | On  | On  | On     |
| SW1-5   | Off    | Off | On  | On  | <b>Off</b> | Off | On  | On     |
| SW1-6   | Off    | On  | Off | On  | <b>Off</b> | On  | Off | On     |
| Counts  | EEPROM | 350 | 400 | 450 | <b>500</b> | 550 | 600 | 650    |

*The initial default setting is for an ElectroBraid™ 2.5 joule energizer is 500*

**CAUTION:** Each brand and size of energizer can have a different Count. The use of a different energizer will probably require adjustment of the Count setting. If not set correctly, the Minder™ may fail to alarm or may trigger false alarms.

**SETTING THE ENERGIZER VOLTAGE COUNT AUTOMATICALLY :**

The Fence Minder™ has a Learning Mode that can determine automatically the correct Count value for an operating energizer.

- 1) Disconnect the energizer from the fence.
- 2) Connect the energizer to the Fence Minder.
- 3) SW1 switches 4, 5 & 6 **MUST** be set to Off.
- 4) Using a small length of wire (5” to 6”), connect the ENABLE terminal to the (-) battery terminal on the Fence Minder.
- 5) Power the Fence Minder™.
- 6) Press the Reset button.
- 7) Remove the small length of wire from the terminals.

The yellow LED will remain lit until your energizer’s voltage Count is saved to EEPROM after which the unit will resume normal operation. The yellow LED should blink in rhythm with the energizer pulse; if not, please call us and let us help you trouble shoot the problem.

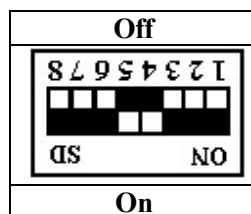
**A.2.3 DEBUG MODE**

The amount of data output on the serial RS232 port when the Fence Minder™ is running is set using SW1-7, SW1-8. This is only to be used by a trained technician.

|         |     |            |     |      |
|---------|-----|------------|-----|------|
| Setting | Low | ..         | ..  | High |
| SW1-7   | Off | <b>On</b>  | On  | On   |
| SW1-8   | Off | <b>Off</b> | Off | On   |

*Default settings are SW1-7 Off; SW1-8 On*

**A.3 DEFAULT SETTINGS FOR SWITCH BANK SW-2 (oriented per the schematic):**



Note: The white block indicates the position of the switch

**A.3.1 UN-INTERRUPTED ENERGIZER OPERATIONS :**

SW2-1 is set to **Off**: the energizer power will be turned off by an Alarm Type 1 (a sudden drop of voltage).

*Default setting is OFF*

**A.3.2 SAMPLE SIZE OF RUNNING AVERAGE**

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

This is the number of samples used to calculate the running average. A low value will increase sensitivity to changes from the running average. The setting uses SW2-2 and SW2-3.

| Setting | <i>Low</i> | ..  | ..  | High |
|---------|------------|-----|-----|------|
| SW2-2   | <b>Off</b> | Off | On  | On   |
| SW2-3   | <b>Off</b> | On  | Off | On   |
| Value   | <b>10</b>  | 20  | 40  | 60   |

**Default setting is 10**

### A.3.3 RAIN TRIGGER LEVEL

This is a threshold (in percentage level) that will determine the sensitivity change appropriate to a switch to “Rain” Mode. The setting uses SW2-4 and SW2-5.

| Setting | Low  | ..   | ..   | <i>High</i> |
|---------|------|------|------|-------------|
| SW2-4   | Off  | Off  | On   | <b>On</b>   |
| SW2-5   | Off  | On   | Off  | <b>On</b>   |
| Value   | 101% | 103% | 105% | <b>107%</b> |

**Default setting is 107%**

### A.3.4 RAIN SENSITIVITY CHANGE

This is the percentage to be added to the sensitivity setting for normal operations to deal with a “Rain“event. The setting uses SW2-6 and SW2-7.

| Setting | <i>Low</i> | ..  | ..  | High |
|---------|------------|-----|-----|------|
| SW2-6   | <b>Off</b> | Off | On  | On   |
| SW2-7   | <b>Off</b> | On  | Off | On   |
| Value   | <b>1%</b>  | 2%  | 3%  | 5%   |

**Default setting is 1%**

### A.3.5 INTERMITTENT SIREN OPERATION DURING ALARM MODE

SW2-8 is set to **ON**: siren will be on for 1 minute (continuous) every 30 minutes.

SW2-8 is set to **OFF**: siren will be on for 2 minutes (continuous) for every 15 minutes.

**Default setting is OFF.**

**NOTE: The Fence Minder WILL NOT FUNCTION with out the cover in place.**

## APPENDIX B: TECHNICAL SPECIFICATIONS

### B.1 Compliance to Standards

CSA C22.2 No. 205-M1983 Signal Equipment  
Consumer and Commercial Products

CSA C22.2 No. 0.4—M1993 Bonding and Grounding of  
Electrical Equipment Protective Grounding

B.2 Operating Temperature Range: -20°C to + 60°C.

### B.3 Input Power Supply

B.3.1 100V - 125V AC / 60 Hz (mains supply)

B.3.2 8 to 16 V DC (battery)

B.4 High Voltage Input – Is designed to be connected ONLY to a fence energizer output.

Impedance: 20,000 ohm.  
Pulse Interval: 0.9 - 1.4 seconds  
Pulse Energy: max 10 Joules  
Pulse Voltage: max 11,000 V

B.5 Rating of the switched AC power supply outlet for the fence energizer.

Voltage: same as input power supply B.3.1  
Current: 1 A continuous, with fuse protection

B.6 Rating of the switched DC power supply output for the fence energizer.

Voltage: same as input power supply B.3.2  
Current: 1.35 A continuous, with fuse protection

B.7 Light Alarm Output: Switched / Continuous on until reset.

Voltage: same as input power supply B.3.2  
Current: 0.65 A continuous, with fuse protection

B.8 Siren Alarm Output: Switched / Limited time operations due to regional and local audible noise pollution regulations.

Voltage: same as input power supply B.3.2  
Current: 0.65 A continuous, with fuse protection

B.9 Auto-Dialer/Wireless Modem Power Supply: Switched / Continuous on until reset.

Voltage: same as input power supply B.3.2  
Current: 0.65 A continuous, with fuse protection

B.10 RS232 serial communication port. All I/O's are short-circuit protected and PC compatible.

Rx: input receive line (2.2k impedance / -15V to +15V)  
Tx: output transmit line (0 to 5 V / 10mA drive capability)  
INT: interrupt input (2.2k impedance /-15V to +15V)  
Enable: 2.2k pull-up/transistor output (100mA drive capability)  
At present, the Rx and Enable lines are inactive.  
Tx serial output: 9,600 baud, 8, N, 1.

B.11 Enclosure:

Made of polymeric material compliant with UL 94V0 flammability standard.  
Offers protection from dust and water splash. The Fence Minder™ operates only indoors.

**NOTE: For outside installation, a suitable enclosure must be used.**

The mechanical assembly is resistant to vibrations and shock as described in Chapter 8 and 27 of UL69.  
Has mounting bracket for wall installation.

B.12 Grounding and other Protective Features:

The unit has earth ground protection and safe gap separation between the high voltage input coming from the energizer and the rest of the circuitry.  
All the exposed Fence Minder™ terminals are stainless steel and operate with voltage less than 16 V DC to ground. Each unit is tested for safe insulation between mains (120VAC plug) and these terminals.  
The connector can accommodate wires between 12 – 24 AWG secured with screws for protection against bad contacts and loosening under shocks and vibrations.  
All output circuits are fuse protected as described above.

*Remember to ensure you have at least 5,000 Volts from Fence to Soil*

### **ElectroBraid Fence Minder™ Limited Warranty**

ElectroBraid Fence Limited warrants this ElectroBraid Fence Minder™ for two years from date of purchase against defects in materials and workmanship and from damage caused by lightning. If you did not buy direct from us, please send us proof of purchase.

**Terms:** This warranty does not apply to any defect caused by improper installation, misuse, tampering, neglect, or any similar reason not related to product malfunctions or defects in the materials or workmanship of the product. The warranty is given only to the first purchaser of the product and not to any subsequent owners or to any other user or person. No person is authorized to grant any warranty additional to or different from this written warranty.

To make a warranty claim, you must mail or deliver the defective product during the warranty period, with transportation charges prepaid to ElectroBraid Fence Limited, with your name, mailing address, proof of purchase and description of problem. If the defect is covered by warranty, ElectroBraid Fence Limited will (at its option) repair or replace the defective product or parts and mail them, postage prepaid, to the address you provide.

If you have any questions regarding this warranty, you may call ElectroBraid at 1-888-430-3330 or write to ElectroBraid Fence Limited, 236 Water Street, Box 19, Yarmouth, Nova Scotia, Canada, B5A 4P8.

NEITHER THE SELLER NOR THE MANUFACTURER SHALL HAVE ANY LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM OR CAUSED BY ANY DEFECT, FAILURE OR MALFUNCTION OF ANY PRODUCT.

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**Toll Free: (888) 430-3330**  
**Fax: (902) 749-0513**  
**Email: [info@electrobraid.com](mailto:info@electrobraid.com)**  
**[www.electrobraid.com](http://www.electrobraid.com)**

ElectroBraid Fence Limited  
236 Water Street, Box 19  
Yarmouth, Nova Scotia  
**Canada, B5A 4P8**