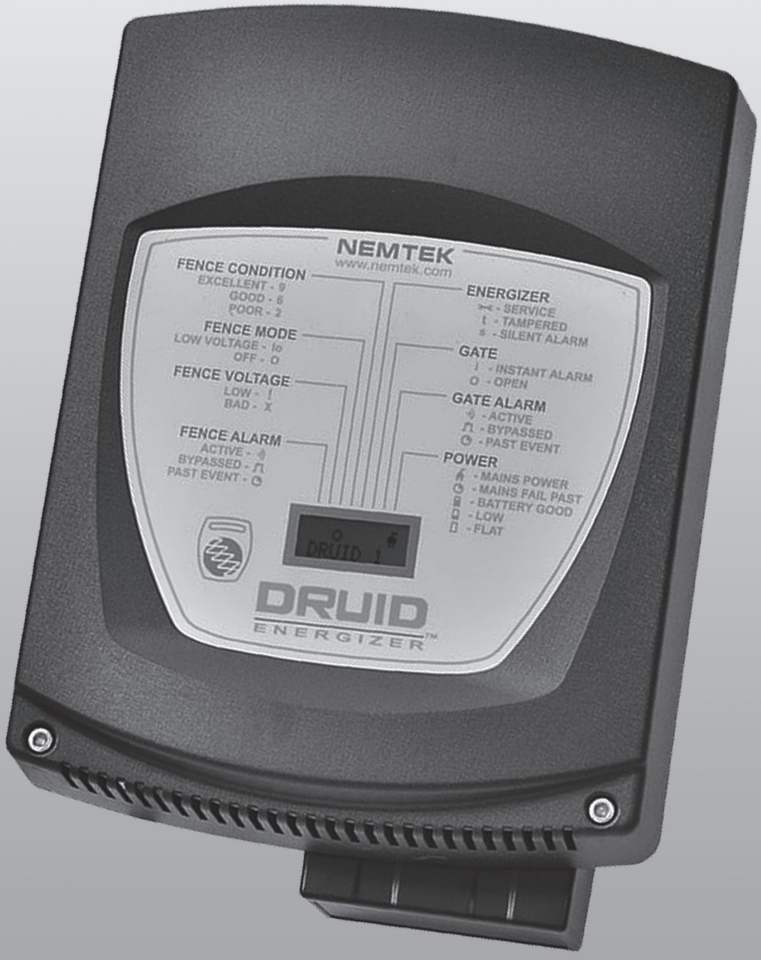
NEMTEK
Electric Fencing Products

DRUID 13 & 15 LCD
Electric Fence Energizers

Installer Manual



Contents

Introduction

The Druid 13 LCD and Druid 15 LCD are battery (12V 7AH nominal) operated energizers suitable for connection to mains (220-240Vac, 50-60Hz).

The battery to be used is a rechargeable lead-acid battery. A non-rechargeable battery must not be used. Lead-acid batteries require venting and it is imperative that the energizer be situated in a well-ventilated area.

A new fully charged battery will typically provide in excess of 24 hours backup. Backup time will vary with fence condition though.

Electric fencing can be lethal. Please avoid entanglement\entrapment hazards and warn the user to avoid head contact with the fence.

Disclaimer

NEMTEK Holdings (Pty) Ltd or any of its subsidiary companies does not guarantee that the operation of the product will be uninterrupted or totally error free.

Energizer specifications may be altered without prior notification.

The installer is referred to the Installation Notes on page 10.

The installer must take into consideration the applicable municipal laws concerning the installation of electric fences. General guidelines are available, or refer to the website: http://www.nemtek.com. International standards can be viewed at http://www.iec.ch and South African standards on http://www.sabs.co.za

Company Profile

The NEMTEK Group of Companies manufacture and distribute intelligent electronic agricultural fencing systems, security and perimeter control systems and have been involved in the security industry since 1990.

We have our own research and development team, designing and manufacturing a full range of globally competitive electric fence energizers and related products.

NEMTEK is continually updating its products according to South African and international standards in order to ensure the highest quality products and continuous customer satisfaction.

Electric fencing can be lethal. Avoid head contact with the fence. When installing please take careful note of the options available for current limiting resistors, the programmable output energy levels as well as the low-voltage operation of the energizer.

Nemtek Contact Details

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Foreword

Druid 13 LCD and Druid 15 LCD energizers should ideally be operated by means of a remote keypad to obtain access to the many energizer features and receive the greatest protection. They can however be operated by means of a Nemtek tab or remote switch.

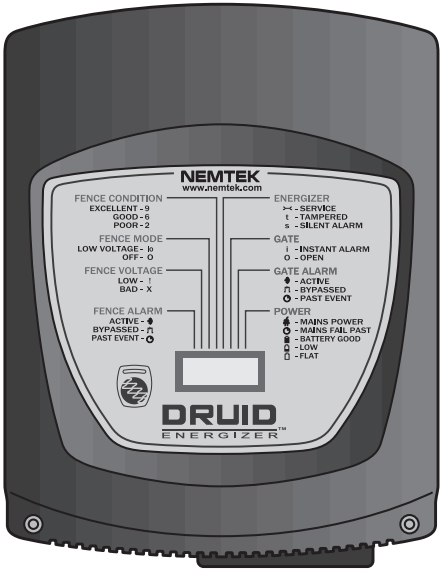
The energizer display will light with a blue (OFF), green (all is OK), yellow (alarm in history or other medium priority event) or red (active alarm condition exists) background to announce the energizer's state at a glance and from a distance.

The gate input is functional even when the energizer is not energizing the fence. Use the Gate Alarm Bypass function if this input is to be ignored.

Druid 13 LCD and Druid 15 LCD energizers includes many user and installer settings. These will be retained in the event of total power loss. i.e. The battery is exhausted during a prolonged mains failure.

A new battery with a full charge will typically provide in excess of 24 hours backup. This time will vary with fence condition though.

Druid 13 LCD and Druid 15 LCD energizers incorporate an advanced and patented fence voltage regulation, arc detection and avoidance system. What this means is that the fence energy is maintained at a higher level than would normally be achievable using a conventional energizer on the same fence, when factors such as poor or damaged insulators, wet insulators after a rain storm, or salt build up on insulators (at the coast) prevent the fence from supporting a high voltage. A conventional energizer will push all available energy through any arcing that may occur across the insulator, thus reducing the fences effectiveness. The Druid LCD energizer however will detect the arcing and then attempt to operate the fence at a voltage just below that at which arcing occurs, thus maintaining higher energy levels on the fence and improving the effectiveness of the fence. Nemtek is the inventor and patent holder of this innovative technology.

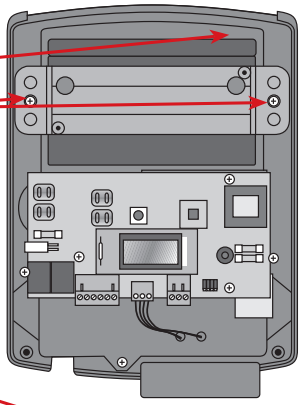


Mounting and Battery Replacement

STEP 1: Disconnect mains. Open the lid after removing the two cap screws. Unplug the battery terminals if connected.

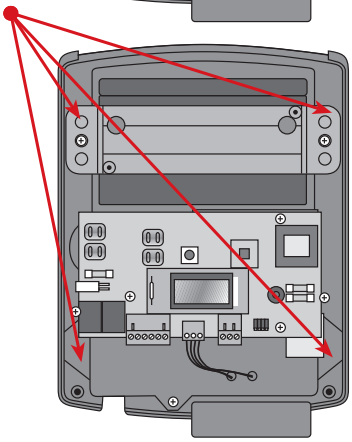
STEP 2: Remove screws and battery bracket.

STEP 3: Remove battery.



Note: Dispose of old battery according to legal requirements. Do not replace with a non-rechargeable battery!

STEP 4: Use a drilling template and drill 4 x 8mm holes in the wall for mounting the unit. Four nail-in anchors are supplied with the unit. Insert the plastic sleeve of the nail in anchor from the inside of the box and then hammer the screw in with a screwdriver and hammer.

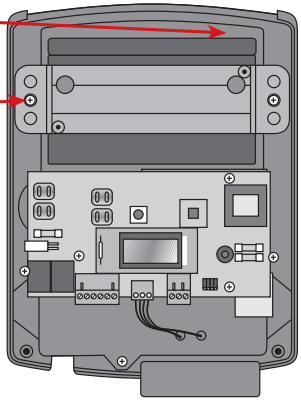


Note: Always insert the plastic sleeve from the inside of the box!

STEP 5: Insert battery with the positive terminal to the top.

STEP 6: Place the battery bracket back (with plastic offsets at the top) and fasten the screws into place.

STEP 7: Connect battery wires. Close the lid by hooking the top of the lid in first and then fasten the bottom down with the two cap screws. Apply mains power to the unit.



Note: Energizer to be mounted vertically against a flat surface, in a well ventilated area. Avoid prolonged exposure to direct sunlight.

PC Board Replacement

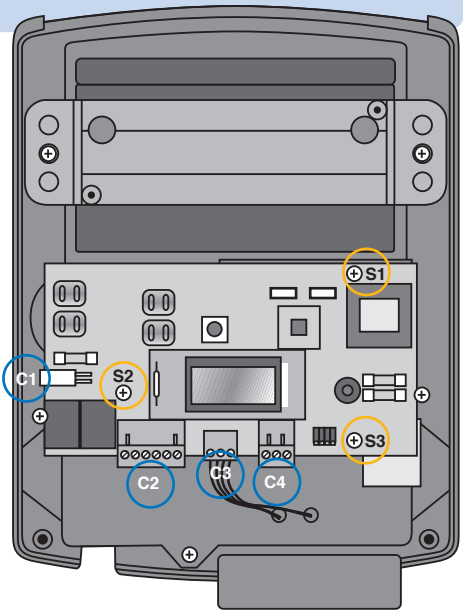
Removal

STEP 1: Disconnect mains power and the battery terminals if connected.

STEP 2: Remove all four connectors, C1 - C4. C3 is removed by pulling upwards on it so that it slides off of the three PCB pins, away from the surface of the PC Board.

STEP 3: Remove the three PCB screws, S1 - S3.

STEP 4: To remove the PC Board, gently pull the PC Board upwards, unplugging it from the two connectors beneath it.



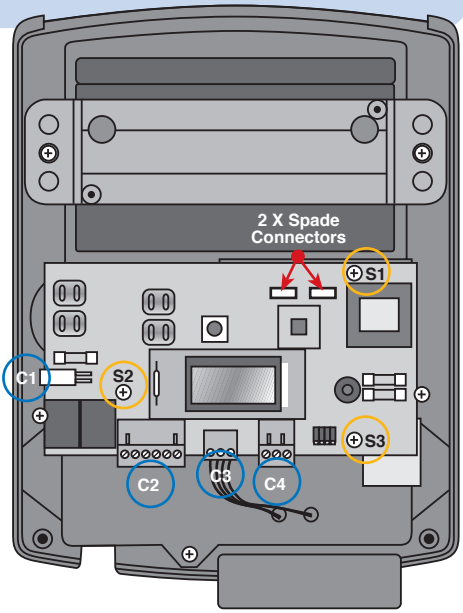
Replacement

STEP 5: To replace the PC Board, align the spade connectors beneath the PC Board, and gently press the PCB down into place.

STEP 6: Re-insert and tighten the three PCB screws.

STEP 7: Reconnect the four connectors to the PC Board.

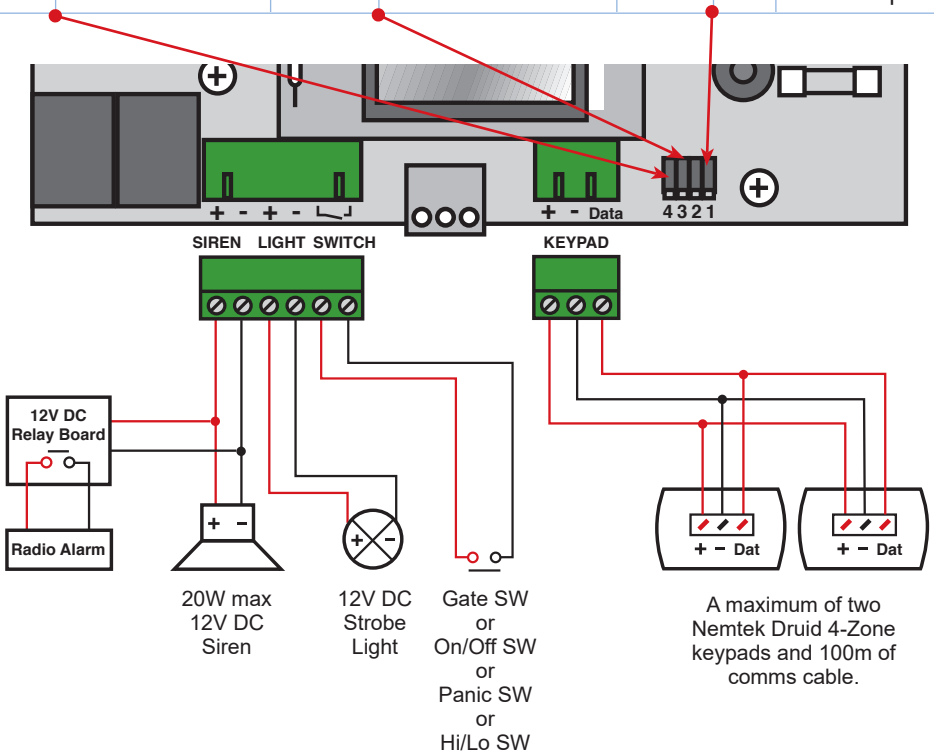
STEP 8: Reconnect the battery terminals and apply mains power.



Connections and Configurations

The configuration jumpers can be disabled by entering the installer keypad code **4020*#**. J3 is enabled only if the configuration jumpers are enabled and the display is set using the keypad to show **GOOD**, **CHECK** or **BAD**, (factory default).

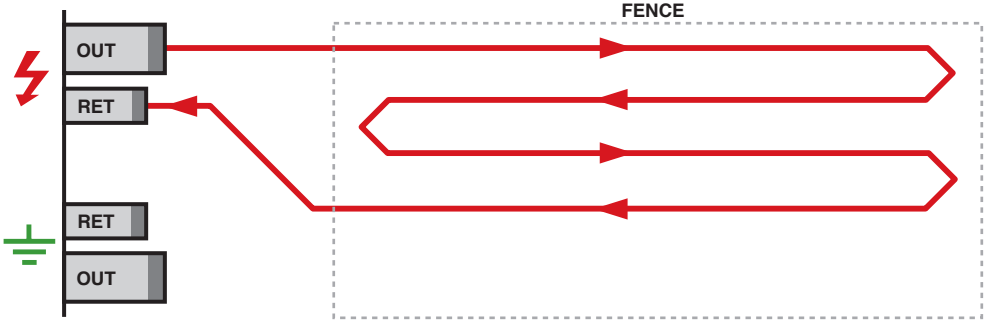
Fence Installation Test Mode Select		LC Display Information Select		Switch Input Function Select		
J4	**Description**	**J3**	**Description**	**J2**	**J1**	**Description**
Off	Test mode disabled	Off	Show GOOD, CHECK or BAD	Off	Off	Gate Switch Input
On	Test mode enabled	On	Show Vp Out, Vp Ret	Off	On	Remote On/Off Input
				On	Off	Panic Button Input
				On	On	High/Low Power Input



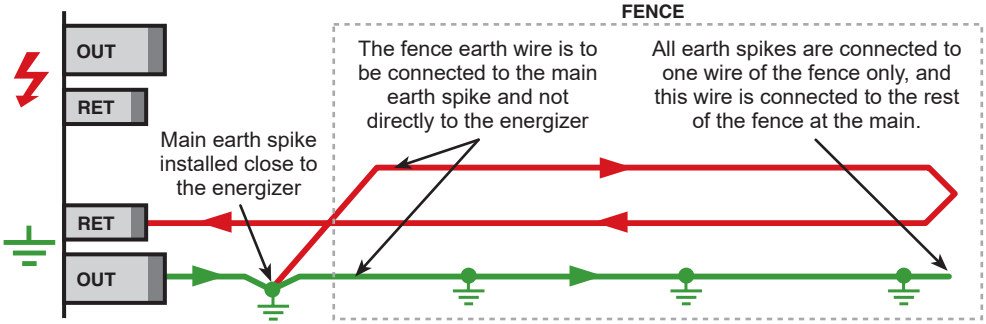
Fence Wiring Diagrams

The installation and erection of an electric fence in, South Africa, is to be done according to the latest addition of SANS 10222-3. In other countries, according to relevant specifications.

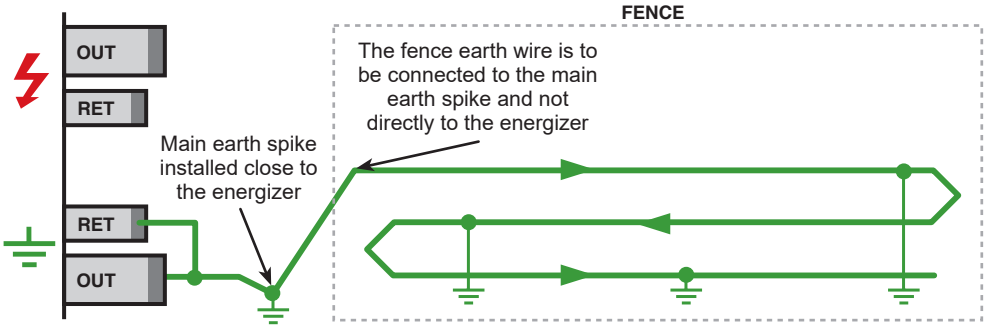
Live wire connection



Earth wire connection with earth loop monitoring (preferred)



Earth wire connection with no earth loop monitoring



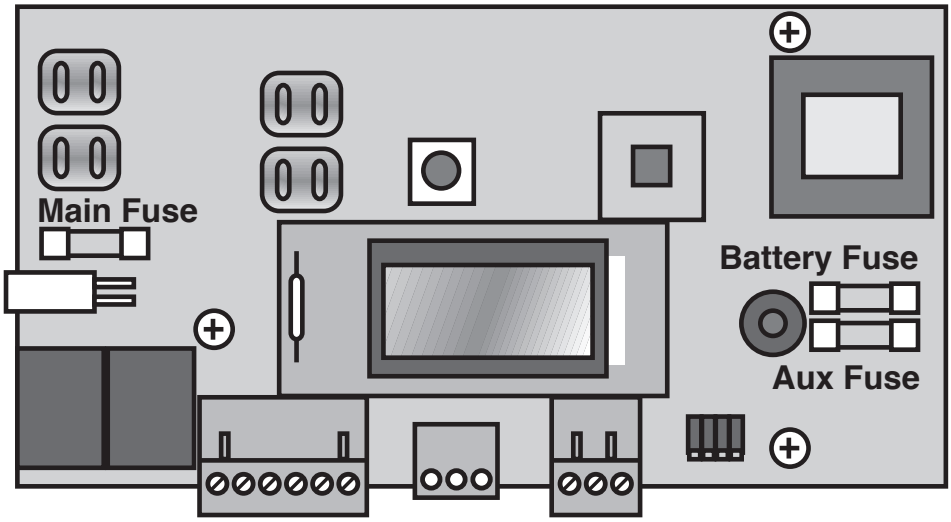
Detailed Service Indicators & Fuses

When the energizer front cover is opened while displaying a service condition (spanner symbol), if the service condition is still present, further information will be displayed indicating the cause of the service condition as listed below.

A = Aux fuse blown
I = Fence interference detected
S = High voltage boost circuit failure, SCR failure or rapid triggering
B = Battery fuse blown, battery fault or not connected
N = Slave energizer communication failure
V = Output high voltage sense error
F = High voltage boost circuit control loss

Fuse description and fault symptoms

All fuses are of the “fast blow” type with a 2A rating. Main fuse 4A



Main Fuse: Energizer displays a battery symbol, and not the mains power symbol (plug).
Battery Fuse: Energizer does not operate when mains power is disconnected.
Aux Fuse: The Siren and strobes do not function.

Installation Notes

- Keep the wires to the fence separate from the keypad, gate, siren, strobe and mains wiring.
- Do not try and modify the energizer. Any unauthorized modifications will null and void the warranty and possibly render the unit illegal.
- If the remote On/Off facility is used, the wire between the remote switch and the energizer can be up to a 100m in length. The switch contact must be closed for the fence to be energized. For security reasons it is better to use an intelligent FOB on the keypad bus.
- A remote receiver can obtain 12VDC from the keypad bus. Current consumption must not exceed 0.1 Amps. This is not sufficient to supply power for an armed response transmitter.
- The siren and strobe light together must not draw more than 1.75Amps.
- To connect a radio alarm transmitter or alarm panel to the energizer, use an isolation relay between the strobe light output and the panel. Never use the energizer battery to power a radio alarm transmitter or alarm panel.
- The wire between the magnetic gate switch and the energizer can be up to a 100m in length, but must not run parallel with any fence wires. The gate switch must be open circuit if the gate is open.
- The remote keypad cable must not exceed 100m in total length. Avoid running this cable parallel with any fence (high voltage) wires.
- You can connect a total of two keypads or FOB units to one energizer. Each must have a unique address setting.
- Use HT (high voltage) wire between the fence and energizer, including the earth wire. Never run these wires in the same conduit or through the same hole as the low voltage wiring.
- Always use ferrules or line clamps to connect two high voltage wires together. Avoid using dissimilar materials for connections like copper on steel.
- The fence must be earthed properly with three earth electrodes close to the energizer. The distance between the fence earth electrode and any other earth systems shall be not less than 2m for a security fence installation. (Typically, a suburban property installation), and 10m for an agricultural fence installation. (Typically a rural property installation.)
- When replacing the front of the energizer, hook the top in first while holding it an angle and then push it closed at the bottom. Fasten the lid down with the two cap screws.
- Always test the fence after installation for correct short and open-circuit alarming at various points along the fence. Activate the fence installation test mode by inserting configuration jumper J4, and then perform this test. Do not forget to remove J4 after testing has been completed.
- Do not use the energizer with non-rechargeable batteries.
- The energizer contains a sealed lead-acid battery that will vent to the atmosphere under certain conditions. For this reason, it is imperative that the energizer be installed in a well-ventilated area.
- Refer to the applicable laws concerning the installation of electric fences in your area.

Installer Programming Options

Restore Factory Defaults

2 3 8 9 #

Returns the energizer configuration, including all PINs to their factory default values

Enter this code within 60s of powering the energizer on after complete power removal, i.e mains and battery power removal simultaneously.

Enter Programming Mode

INSTALLER PIN _ _ _ _ _ _ * 0 #

Enables programming mode

Programmable options can only be changed once the energizer is placed into programming mode. The keypad will beep three times if the code is accepted. The factory default installer PIN is 012345. Programming mode will timeout and exit after five minutes or upon entering the *# exit code.

Change Installer Pin

0 0 NEW INSTALLER PIN _ _ _ _ _ _ #

Changes the factory default six-digit installer PIN to a new six-digit PIN

Siren On Time

0 1 m s * #

Sets the siren on (active) time
m = minutes, s = x10 seconds
Programmable range is **0101*#** (10s) to **0141*#** (4m:10s)
Factory default value is **0120*#** (2m:0s)

Siren active time is the amount of time that the siren will sound before automatically turning off, if not reset by the user.

Siren Off Time

0 2 m s * #

Sets the siren off (inactive) time
m = minutes, s = x10 seconds
Programmable range is **0201*#** (10s) to **0241*#** (4min:10s)
Factory default value is **0230*#** (3min:0s)

Siren off time is the amount of time that the siren will be forced to remain off after having automatically timed out (siren on time) from a previous alarm condition.

Installer Programming Options

Events Before Re-arm Timeout

0 3 0 ? _ * #

Sets the total unacknowledged events before the re-arm time comes into play
? = total events before re-arm time
Programmable range is **0301*#** (1 event) to **0307*#** (7 events)
Factory default value is **0303*#** (3 events)

See **Siren Re-arm Time** below.

Siren Re-arm Time

0 4 d h h m m * #

Sets the sirens re-arm time period
d = day, **hh** = x10 hours + hours, **mm** = x10 minutes + minutes
Programmable range is **0400001*#** (1min) to **0471402*#** (7d:14h:02min)
Factory default value is **0410000*#** (1d:00h:00min)

The re-arm time comes into play after the siren has sounded for the set number of events without being manually reset by the user. This is required by law to prevent an alarm from sounding indefinitely while the owner is not home to correct the alarm condition.

Strobe Light Relay Function

0 0 1 ? _ * #

Selects between zone 1 strobe light only, zone 1 & 2 combined strobe light or zone 1 on/off.
? = 0 (zone 1 strobe light), 1 (zone 1 & 2 combined) or 2 (zone 1 on/off indication)
Factory default value is **0010*#** (zone 1 strobe light only)

The strobe light relay can be assigned to be active when an alarm is triggered (0) or to indicate when the fence is energized (1)

Gate Switch Input Funtion

1 1 0 ? _ * #

Sets the function assigned to the gate switch input, if the configuration jumpers have been disabled. (See code **402?*#**).
? = 0 (gate), 1 (remote on/off), 2 (panic button), 3 (fence high/low power)
Factory default value is **1100*#** (gate input)

As a gate switch input, open circuit represents the gate is open. As a remote on/off input, the fence is activated and deactivated as detailed in the GATE INPUT TOGGLE SELECT function. As a panic button input, the alarm will sound if the input is open circuited. As a fence high/low power input, the fence will run in high power mode when the input is closed circuit and in low power mode when the input is open circuit.

Installer Programming Options

Gate Input Toggle Select

1 1 1 ? * #

Selects toggling or direct on/off control of the fence.
? = 0 (direct control) or 1 (toggle control)
Factory default value is **1111*#** (toggle control)

With direct control, the fence is energized when the input transitions to open circuit.
With toggle control, the fence operating state is toggled each time the input transitions from closed to open circuit.

Gate Alarm Delay Time

1 0 m s * #

Sets the gate alarm delay time
m = minutes, **s** = x10 seconds
Programmable range is **1001*#** (10s) to **1041*#** (4min:10s)
Factory default value is **1010*#** (1min:0s)

The gate alarm will only sound once the gate has remained open for longer than the GATE ALARM DELAY time. The GATE ALARM INSTANT user code can be used to temporarily override this delay period, and the GATE ALARM BYPASS user code can be used to temporarily disable the gate alarm function.

Fence Condition Check Level

2 0 1 ? * #

Sets the value at which the CHECK message will be displayed should the fence condition indicator reduce to or below this set value.
? = check level between 3 and 6
Programmable range is **2013*#** (3 = fair to poor) to **2016*#** (6 = good)
Factory default value is **2014*#** (4 = fair)

Fence State at Power On

2 0 2 ? * #

Sets the operating state that the fence is returned to after a complete power failure has ended.
? = 0 (off), 1 (on) or 2 (fence returns to on/off state at power loss)
Factory default value is **2022*#** (fence returns to on/off state at power loss)

A complete power failure occurs when the energizer shuts down due to the internal battery running flat during a prolonged mains power failure.

Installer Programming Options

Fence Interference Alarm

2 0 3 ? * #

Enables or disables the fence interference detected alarm function.
? = 0 (disabled), 1 (enabled)
Factory default value is **2031*#** (enabled) for DRUID_18
Factory default value is **2030*#** (disabled) for DRUID_114

Fence interference may occur when a neighbouring fence comes into contact with the fence been driven by this energizer or when criminals attempt to defeat the energizer fence alarm detection mechanism.

Fence High Power Voltage

2 1 k v * #

Sets the energizer output voltage during high power operation.
k = kilo volts, **v** = x100 volts
Programmable range is **2160*#** (6.0kV) to **2192*#** (9.2kV)
Factory default value is **2190*#** (9.0kV)

The fence condition indication value is affected by this value. Setting this value to a lower voltage will cause the fence condition indication to increase towards 9 (excellent) as the energizer works less hard to maintain the lower set voltage on the fence.

Fence High Power Check Level

2 2 k v * #

Sets the value at which the CHECK message will be displayed should the fence return voltage reduce to below this set value when operating in high power mode.
k = kilo volts, **v** = x100 volts
Programmable range is **2230*#** (3.0kV) to **2260*#** (6.0kV)
Factory default value is **2240*#** (4.0kV)

The check level must always be set above the alarm level for the new setting to be accepted.

Installer Programming Options

Fence High Power Alarm Level

2 3 k v * #

Sets the value at which the BAD message will be displayed, and at which the alarm will sound should the fence return voltage reduce to or below this set value when operating in high power mode.
k = kilo volts, **v** = x100 volts
Programmable range is **2320*#** (2.0kV) to **2350*#** (5.0kV)
Factory default value is **2330*#** (3.0kV)

The alarm level must always be set below the check level for the new setting to be accepted.

Fence Alarm Delay

2 5 ? ? * #

Sets the number of violating fence pulses that have to occur before the alarm is activated.
?? = number of pulses before alarm occurs
Programmable range is **2501*#** (1 pulse) to **2515*#** (15 pulses)
Factory default value is **2503*#** (3 pulses)

Fence Low Power Voltage

2 7 k v * #

Sets the energizer output voltage during low power operation.
k = kilo volts, **v** = x100 volts
Programmable range is **2710*#** (1.0kV) to **2730*#** (3.0kV)
Factory default value is **2715*#** (1.5kV)

Fence Low Power Alarm Level

2 8 k v * #

Sets the value at which the BAD message will be displayed, and the alarm will sound should the fence return voltage reduce to or below this set value when operating in low power mode.
k = kilo volts, **v** = x100 volts
Programmable range is **2805*#** (0.5kV) to **2825*#** (2.5kV)
Factory default value is **2808*#** (0.8kV)

Installer Programming Options

Fence Control Algorithm

3 0 1 ? * #

Sets the fence control algorithm.
? = 0 (conventional) or 1 (arc detection and avoidance)
Factory default value is **3011*#** (arc detection and avoidance)

Conventional control will output a maximum of 8kV onto the fence to reduce the risk of arcing across insulators. Setting the FENCE HIGH POWER VOLTAGE to a value greater than 8kV will not raise the output voltage beyond 8kV when using conventional control.

Magnetic Switch

4 0 1 ? * #

Enables or disables the magnetic switch.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4011*#** (enabled)

When using a keypad, disable the magnetic switch to increase the level of security offered.

Configuration Jumpers

4 0 2 ? * #

Enables or disables the configuration jumpers.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4021*#** (enabled)

Tamper Alarm

4 0 3 ? * #

Enables or disables the tamper alarm function.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4031*#** (enabled)

When enabled, the tamper alarm will sound if the energizer front is opened while the fence is energized. The tamper symbol t will always be shown on the display, regardless of wether tamper alarm is enabled or disabled.

Service Alarm

4 0 4 ? * #

Enables or disables alarming during a service condition.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4041*#** (enabled)

Installer Programming Options

Display Installer Tel Number

4 0 5 ? * #

Enables or disables the display of the installers telephone number during service condition.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4050*#** (disabled)

When enabling this function, don't forget to set a new telephone number.

Show Key Presses on LCD

4 0 6 ? * #

Enables or disables the displaying of keypad key presses on the energizer display.
? = 0 (disabled) or 1 (enabled)
Factory default value is **4061*#** (enabled)

For increased security when the energizer and keypad are far apart, it may be desirable to disable this function and so prevent the user PIN being read from the energizer display.

Solar Powered Installation

4 0 7 ? * #

Modifies the energizer operation for permanent battery operation.
? = 0 (disabled, requires mains power) or 1 (solar installation)
Factory default value is **4070*#** (disabled)

If the energizer is to be run permanently from battery power, which is typically the case when running a solar powered site, then enabling this function will prevent the energizer from reacting to mains power loss as an error condition.

Set Installer Tel Number

10 DIGIT INSTALLER TELEPHONE NUMBER
_ _ _ _ _ _ _ _ _ _ #

Sets the telephone number to be displayed during a service condition.

The telephone number must be exactly 10 digits long and the displaying of this number must be enabled, as the factory default is to not display this number. (See code **4051*#**)

Exit Programming Mode

*** #**

Exits programming mode.

Programmable Options Summary

RESTORE FACTORY DEFAULTS	**2 3 8 9 #**
ENTER PROGRAMMING MODE	**(6 digit installer PIN) * 0 #**
CHANGE INSTALLER PIN	**0 0 (new 6 digit installer PIN) #**
SIREN ON TIME	**0 1 m s * #**
SIREN OFF TIME	**0 2 m s * #**
EVENTS BEFORE RE-ARM TIMEOUT	**0 3 0 ? * #**
SIREN RE-ARM TIME	**0 4 d h h m m * #**
STROBE LIGHTRELAY FUNCTION	**0 0 1 ? * #**
SIREN RELAY FUNCTION	**0 0 3 ? * #**
GATE SWITCH INPUT FUNCTION	**1 1 0 ? * #**
GATE INPUT TOGGLE SELECT	**1 1 1 ? * #**
GATE ALARM DELAY TIME	**1 0 m s * #**
FENCE CONDITION CHECK LEVEL	**2 0 1 ? * #**
FENCE STATE AT POWER ON	**2 0 2 ? * #**
FENCE INTERFERENCE ALARM	**2 0 3 ? * #**
FENCE HIGH POWER VOLTAGE	**2 1 k v * #**
FENCE HIGH POWER CHECK LEVEL	**2 2 k v * #**
FENCE HIGH POWER ALARM LEVEL	**2 3 k v * #**
FENCE ALARM DELAY	**2 5 m s * #**
FENCE LOW POWER VOLTAGE	**2 7 k v * #**
FENCE LOW POWER ALARM LEVEL	**2 8 k v * #**
FENCE CONTROL ALGORITHM	**3 0 1 ? * #**
MAGNETIC SWITCH	**4 0 1 ? * #**
CONFIGURATION JUMPERS	**4 0 1 ? * #**
TAMPER ALARM	**4 0 3 ? * #**
SERVICE ALARM	**4 0 4 ? * #**
DISPLAY INSTALLER TEL NUMBER	**4 0 5 ? * #**
SHOW KEY PRESSES ON LCD	**4 0 6 ? * #**
SOLAR POWERED INSTALLATION	**4 0 7 ? * #**
SET INSTALLER TEL NUMBER	**(10 digit installer tel number) #**
EXITING PROGRAMMING MODE	*** #**

IEC Safety Information

- **There are no user serviceable parts inside the energizer.**

- **If the supply cord is damaged, it must be replaced by the manufacturer, its service agent, or similar qualified persons in order to avoid a hazard.**

- **This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.**

- **Electric fencing can be lethal. Avoid head contact with the fence. Ask the installer to explain the options of current limiting resistors, the programmable output energy levels as well as the low-voltage operation of the energizer.**

WARRANTY

Unless otherwise specified all Nemtek energizers have a 2 year warranty and all other fencing components have a 1 year warranty from date of sale against defects due to faulty workmanship or materials. Nemtek (Pty) Ltd will, at its discretion, either repair or replace a product that proves to be defective.

Nemtek (Pty) Ltd does not guarantee that the operation of the product will be uninterrupted and totally error free. Faulty products must be returned to one of the Nemtek Group outlets. The buyer shall pay all shipping and other charges for the return of the product to Nemtek (Pty) Ltd.

LIMITATION OF WARRANTY

The warranty does not apply to defects resulting from acts of God, modifications made by the buyer or any third party, misuse, neglect, abuse, accident or mishandling.

EXCLUSIVE REMEDIES

The remedies provided herein are Nemtek (Pty) Ltd's sole liability and the buyers sole and exclusive remedies for breach of warranty. Nemtek (Pty) Ltd shall not be liable for any special, incidental, consequential, direct or indirect damages, whether based on contract, tort, or any other legal theory. The foregoing warranty is in lieu of any and all other warranties, whether expressed, implied, or statutory, including but not limited to warranties of merchantability and suitability for a particular purpose.

NEMTEK
Electric Fencing Products

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