



HIT-NOT Proximity System

Linear Zone Marker (LZM)

User's Manual v1.0

FREDERICK ENERGY PRODUCTS, LLC

1769 Jeff Road

Huntsville, AL 35806

1.800.489.6915

US7,420,471; US8,169,335; US8,232,888; US5,939,986;
US6,810,353; AU2005289704; ZA2007/02919; ZA2008/02673;
ZA2010/06816, ZA2010/09068 Patent Pending

Table of Contents

1. Overview.....	2-3
1.1 Theory of Operation.....	2
1.2 Frequency of Operation.....	2
1.3 FCC/IC Information.....	3-4
2. Operation.....	4-6
2.1 Installation Information.....	4
2.1.1 Functional Options.....	5
2.1.2 Interoperability Warning.....	5
2.2 Power Source/Charging.....	5
2.3 Alerts.....	5
2.4 Maintenance.....	5
2.5 Adjustments.....	5
2.6 Interferences.....	6
2.7 LZM Specifications.....	6
3. Revision History.....	6

1 Overview

The Linear Zone Marker (LZM) is an auxiliary device that provides complementary capabilities to a HIT-NOT® Proximity Protection System. Its main purpose is to silence Personal Alarm Devices (PADs) or alert vehicles equipped with a HIT-NOT® Magnetic Field Generator (MFG) and Collision Avoidance Module (CAM) that they are approaching the LZM. The LZM creates a pulsing 73 kHz magnetic field similar to the one generated by a HIT-NOT® Magnetic Field Generator (MFG) but is slightly modified. This difference allows a PAD or CAM to detect the LZM field and recognize that they are in an LZM-Controlled Area. An LZM is installed along the controlled area either on a wall, rack, or on the floor under a mat.

A LZM can also be used as a device to provide a Silent Zone for PADs. The silent zone option is selected during installation by a switch on the LZM printed circuit board. In the silent zone mode, the LZM magnetic field is slightly modified from the standard LZM field. The silent zone mode only functions to create a silencing magnetic field and does not send signals to other peripheral devices.

The LZM can only operate in one mode at a time.

1.1 Theory of Operation

Functions of the Linear Zone Marker are:

- To generate a 73 kHz field in a fixed linear area – Field size is adjustable by the user.
- An optional function is to generate a slightly modified 73 kHz field that PADs recognize as a silencing field that causes PADs to ignore standard magnetic fields created by other HIT-NOT® Magnetic Field Generators.

Detection/analysis of the LZM 73 kHz magnetic field by a PAD or CAM is same process as explained in PAD and MFG/CAM User's Guides.

Using a slide switch on the LZM Controller printed circuit board, the LZM can be switched to produce another slightly-modified magnetic field that PADs can recognize as a silencing field similar to those produced by other HIT-NOT® Silent Zone devices such as Room Silent Zone devices. The LZM design geometry can provide a larger silent zone field with a different shape. The LZM in silent zone mode does not provide signals to other peripheral warning devices.

To comply with FCC RF Exposure requirements, a minimum separation distance of 20cm (8in) should be maintained between the device and all persons during normal operation.

1.2 Frequency of Operation

The LZM emits magnetic fields on a frequency of 73 kHz it does not have the ability to receive any transmission.

1.3 FCC/IC Information

The FCC ID for the Linear Zone Marker is QUI-HN-LZM and complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received including interference that may cause undesired operation.

Any intentional or unintentional changes or modifications to the configuration of the LZM, not expressly approved by Frederick Energy Products LLC, could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is not guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Conformité aux normes FCC Cet équipement a été testé trouvé conforme aux limites pour un dispositif numérique de classe B, conformément à la Partie 15 des règlements de la FCC. Ces limites sont conçues pour fournir une protection raisonnable contre les interférences nuisibles dans une installation résidentielle.

Cet équipement génère, utilise et peut émettre des fréquences radio et, s'il n'est pas installé et utilisé conformément aux instructions du fabricant, peut causer des interférences nuisibles aux communications radio.

Rien ne garantit cependant que l'interférences ne se produira pas dans une installation particulière. Si cet équipement provoque des interférences nuisibles à la réception radio ou de télévision, qui peut être déterminé en comparant et en l'éteignant, l'utilisateur est encouragé à essayer de corriger les interférence par une ou plusieurs des mesures suivantes:

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'équipement et le récepteur.

--Branchez l'appareil dans une prise sur un circuit différent de celui auquel le récepteur est connecté.

--Consulter le vendeur ou un technicien radio / expérimenté.

Les changements ou modifications à cet appareil sans expressément approuvée par la partie responsable de conformité pourraient annuler l'autorité de l'utilisateur de faire fonctionner cet équipement.

The required notices are specified in the RSS documents (including RSS-Gen) applicable to the equipment model. **These notices are required to be shown in a conspicuous location in the user manual for the equipment, or to be displayed on the equipment model. If more than one notice is required, the equipment model(s) to which each notice pertains should be identified.** Suppliers of radio apparatus shall provide notices and user information in **both English and French.**

This device complies with Industry Canada license-exempt RSS-standards(s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avecx Industrie Canada exempt de licence Rss standard(s). Son fonctionnement est soumis aux deux conditions suivantes:

- (1) cet appareil ne peut causer d'interférence, et*
- (2) cet appareil doit accepter toute interférence, y compris des interférences qui peuvent provoquer un fonctionnement indésirable du périphérique.*

2 Operation

2.1 Installation Information

The most common mounting for a LZM is to mount it approximately 3 feet above the floor on a wall or behind a rack face along the desired area. The zone is created by a 1" wire loop ran along the length of the zone. The length of the Controlled Area can vary between 30 – 200 ft. The length is requested by the user when an order is placed and is implemented into the hardware prior to shipment. Wires forming the loop are typically enclosed inside PVC pipes to prevent unintentional damage. The magnetic field from a wire loop is a circular field around the loop, forming a tube-shaped field along the wire loop. This results in a narrow rectangular magnetic field where the width is user-adjustable between 6" to 5 ft. The LZM unit should be installed at one end of the wire loop.

2.1.2 Functional Options

Operational modes are selected via two single slide switches on the LZM Controller printed circuit board. The first switch selects the mode, either Rack Alert (alerting approaching vehicles) or Silent Mode. The second switch changes the type of Silent Zone field (either jammer or “Zap Ping”). Modes are shown in the table below.

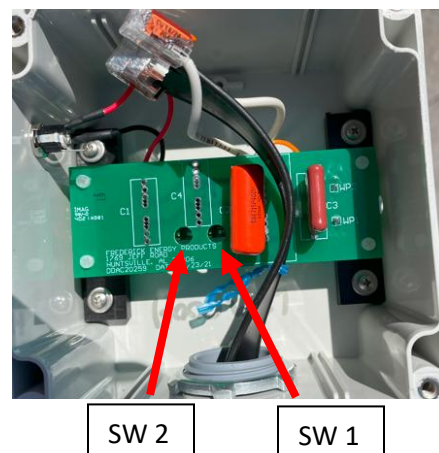


Table 1 Switch Settings

Mode	SW1	SW2
Silencer (ZP)	On	On
Silencer (Jammer)	On	Off
Rack Alert	Off	On

2.1.3 Inoperability Warning

A LZM does not generate inoperability warnings.

2.2 Power Source/Charging

The LZM receives 12-24 VDC power from a Wall Wart Power Converter connected to a 110 – 240 VAC power source. There are no batteries in the LZM; thus, no charging is required.

2.3 Alerts

LZMs do not issue alerts.

2.4 Maintenance

The LZM should be regularly cleaned to reduce buildup of dust and dirt. Daily checks should be performed to verify that:

- **Power is applied** - Verify plug is securely connected.
- **Verify Size of the LZM Controlled Area** - Use a pedestrian PAD to verify that the size or width of the LZM magnetic field is correct.

2.5 Adjustments

The size/width of the LZM magnetic field can be manually adjusted using the internal potentiometer.

2.6 Interferences

The LZM does not sense magnetic fields – hence EMI does not interfere with LZM operation.

2.7 LZM Specifications

Model Number: HN-LZM

Size: 5" x 5" x 3.5" / 127 mm x 127 mm x 76mm

Weight: .8 lbs ./ .36 kg

Input Voltage: 12-24 VDC

Magnetic Field Frequency: 73 kHz

Receiver Frequency: None

Transmitter Frequency: None

Transmitter Power: N/A

LZM Battery: None

Operating Temperature Range: -40°C to + 55°C ; -40°F to 130°F

Shipping Considerations: None

3 Revision History

3.1 Version 1.0 – Aug. 16, 2024

Original Release. No revision history.