



# HIT-NOT Proximity System

## Magnetic Field Generator

### User's Manual v1.0



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ZA2010/06816, ZA2010/09068 Patent Pending

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# 1 Overview

The Magnetic Field Generator is part of a complete HIT-NOT Proximity Detection system from Frederick Energy Products which provides audible and visual warnings to both individuals and to vehicle operators to alert them that the individual has entered too close to an operating piece of equipment and is in a dangerous situation. The Magnetic Field Generator attaches directly to a vehicle or piece of machinery. The HIT-NOT® Proximity system includes an optional add-on module, which is not standard on the basic system.

## 1.1 Theory of Operation

The functions of the Magnetic Field Generator are:

- To generate a 73 kHz field around a vehicle or piece of machinery to act as a protection zone for collision avoidance and for proximity detection for the protection of individuals.
- To receive a 916.48 MHz RF signal from a Personal Alarm Device (PAD).
- An add-on for a Collision Avoidance Module (CAM) between vehicles.

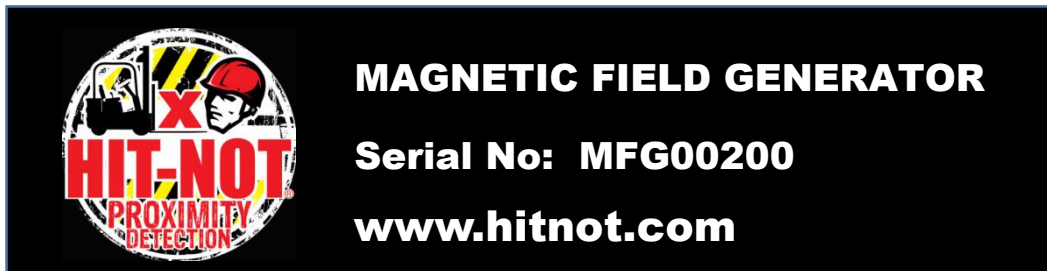
The Magnetic Field Generator has an internal 73 kHz generator and a wire wrapped ferrite radiator that creates a field to serve as a cautionary zone around the vehicle or machine. When a Personal Alarm Device (PAD) is in close proximity of the Magnetic Field Generator, the PAD will detect the 73 kHz magnetic field from the generator and analyze its field strength. If the 73kHz field strength received by the PAD is above a certain threshold, indicating the distance between the Magnetic Field Generator and the PAD is close enough to signify a Warning or Danger condition, then it will reply to the Magnetic Field Generator with an 916.48 MHz transmission. The Magnetic Field Generator has its 916.48 MHz receiver on when it is transmitting the 73 kHz field and is “listening” to receive any 916.48 MHz transmissions from an individual equipped with a PAD to indicate the individual is too close to the vehicle and warrants a warning or danger condition. If the Magnetic Field Generator receives indication that a Warning or Danger condition exists, it will turn on the appropriate LED indicator and connected Warning Module (sounder for the Magnetic Field Generator).

## 1.2 Operating Frequency

The Magnetic Field Generator will transmit on a frequency of 73 kHz and receive on a frequency of 916.48 MHz.

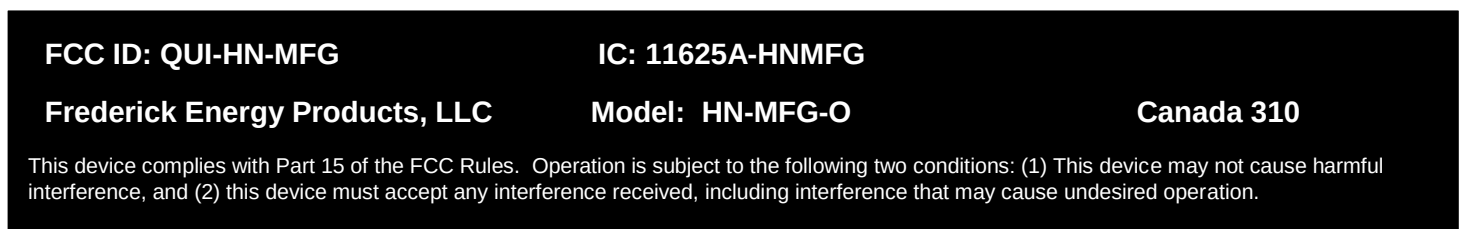
## 1.3 Label Information

The Magnetic Field Generator label is located on the top housing next to the LED lights to indicate power and warning. Serial Number label is located on the side of the middle housing. The CE label is on both the serial number label and the main label.



Proximity Module Labels

The HIT-NOT label defines the model and serial number of the Magnetic Field Generator.



FCC and IC Label for Proximity Module

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

## 1.4 FCC/IC Information

The FCC ID for the Magnetic Field Generator is QUI-HN-MFG and complies with Part 15 of the FCC Rules. The IC ID for the Magnetic Field Generator is 11625A-HNMFG. 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 Magnetic Field Generator not expressly approved by Frederick Energy Products LLC could void the user's authority to operate the equipment.

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/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 Magnetic Field Generator is mounted on a vehicle or piece of machinery. Metal near the Magnetic Field Generator may impact performance by reducing the field size. After installing the Magnetic Field Generator on the machine, performance of the unit should be verified by operation and test.

#### 2.1.1 Inoperability Warning

The Magnetic Field Generator may experience erratic responses when in very close proximity to some electronic devices. Electrical devices may transmit an electrical field and noise from these fields *may* cause interference with the Magnetic Field Generator. A safe guideline is to keep the Magnetic Field Generator *at least 4in or 100mm* away from any electrical devices included but not limited to methane monitor, radio, mobile phone, GPS, PDA, battery charger and laptop computers.

## 2.2 Charging

The Magnetic Field Generator is directly powered downstream when the ignition of the vehicle is turned on and requires no charging.

## 2.3 Alerts

Magnetic Field Generators are designed to automatically adjust and maintain the original zone size. If the truck supply voltage changes or changes occur resulting in a reduction of zone sizes, the system will automatically adjust as much as 5% to ensure that the zones remain where they were initially set. If the processor senses a significant power reduction, the alarm may sound for a period of time. When the sounder is activated, power must be cycled to restore normal operation. If the problem persists, then service is required.

The generator tolerates voltage fluctuations from 10-16V. A converter is needed for voltages greater than 15V. If the processor switch (SW) on the PCB is in the OFF position, a continuous alarm will sound at maximum dB.

## 2.4 Maintenance

The Magnetic Field Generator should be regularly cleaned to reduce buildup of dust and dirt. The user should check to see if the LEDs are working before using the device.

## 2.5 Adjustments

Magnetic field size and volume of the Warning Module are adjustments which are made on the Magnetic Field Generator. To make the adjustments, remove the lid on the top housing. To adjust the magnetic field size, turn the screw located on the PWM pot. The volume to the Warning Module can be adjusted by turning the screw on the VOL pot. Turning in a clockwise direction will increase while turning counterclockwise will decrease the field or volume.

*Adjustments must be made by a professional.*

## 2.6 Interferences

The Magnetic Field Generator may receive false triggering (generate an alarm) signals from some RF-based devices including high power radios and cell phones. Such devices will need to be moved further away from the generator. If the devices may not be moved, then the path may need to be marked to indicate areas of interference of the system. If possible the route may need to be changed. It may be possible for the generators to cause interference though this should be rare because the average energy generated by this device is quite low at 73 kHz.

## 2.7 Generator Specifications

Part Number: HN-MFG

Size: 30" x 3.11" x 4.375" with Mounting Arm; 8.875" x 3.06" x 3.52" without Mounting Arm

Weight: 3.8 lbs./ 1.724 kg

Input Voltage: 12 VDC

Magnetic Field Frequency: 73 kHz pulsing AC field. Magnetic field pulses occur approx. 3% of the time.

Magnetic Field Strength: negligible

Maximum Current Draw: Less than 5A. It is not a constant draw with a magnetic field pulsing at 3% of the time. Current draw between pulses is very low and the overall current draw is low.

Receiver Frequency: 916.48 MHz

Transmitter Frequency: 73 kHz

Operating Temperature Range: -30°C to + 55°C; -22°F to 131°F

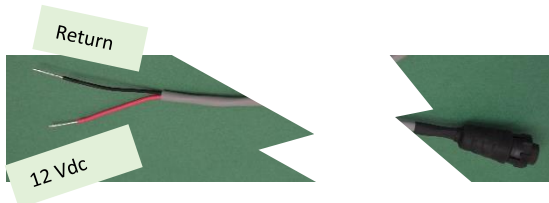
Shipping Considerations: Contains a Lithium Metal Button Cell (packed in equipment)

## 2.8 Generator System Installation Guide

To Be Installed By a Professional

Step 1

### Power Cable



Connect to a switched and fused (5A) circuit.

Step 2

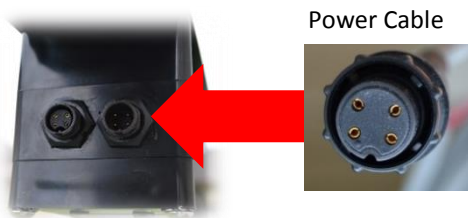
### Install Generator



Install the Generator on top of the overhead guard and at least 4" (10.2cm) from the frame. **It should be as far from the strobe light as possible.** Adjust magnets to fit the overhead guard.

Step 3

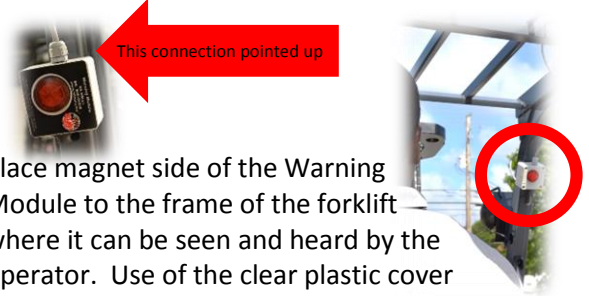
## Power to Generator



Connect Power Cable (female) to Generator (male).  
Turn locking ring to secure the connection.

Step 4

## Install Warning Module

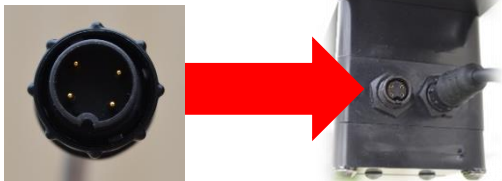


Place magnet side of the Warning Module to the frame of the forklift where it can be seen and heard by the operator. Use of the clear plastic cover is a company decision.

Step 5

## Warning Module to Generator

Warning Module Cable



Connect Warning Module (male) to Generator (female).

Step 6

## Cab Silencer



In order to avoid battery drain while the vehicle is off, connect to a switched and fused (5A) circuit.

**Place within 21" of the Operator's PAD AND 4ft away from the generator. The Cab Silencer will blind the CAM if installed on the overhead guard.**



Step 7

## Adjustments

All adjustments in Steps 8-10 need to be done by a professional.



Step 8

## Volume Adjust



- Remove the bottom cover of the generator with a 5/32" hex bit.
- Turn on the truck and activate the PAD.



- Adjust the "VOL" pot with a 3/32" slotted screwdriver. Increase volume-clockwise, decrease volume-counterclockwise. Do NOT turn beyond the "STOP".
- Return the bottom cover if Field Size is correct.

Step 9

## Field Adjust

- Remove cover-see step 8
- Have a Pedestrian with a PAD at the desired Danger Zone limit (~34' max. or 10.3m), slowly adjust the "PWM" pot (clockwise-increase field, counterclockwise-decrease field with a 3/32" slotted screwdriver until the danger zone alerts at the desired distance.
- Return bottom cover.



Step 10

## Silent Zone Adjust

- Factory set to max. of ~22 in. or 56cm.
- To decrease the size, unscrew the cap from the Cab Silencer.
- Activate a PAD and turn on truck.
- Using a 3/32" slotted screwdriver, turn the Pot counterclockwise until the PAD silences at the desired location.
- Replace cap.



## 2.9 Safety Consideration

The driver and pedestrian should not be in close proximity while the truck is in gear. The driver must turn off the truck while a pedestrian is standing next to the truck. An alternate solution is a switch applied to the emergency brake to cut the circuit to the generator while the brake is activated.

## 3 Warranty

### HIT-NOT® WARRANTY TERMS AND CONDITIONS

**IMPORTANT-READ CAREFULLY: BY AND INSTALLING AND USING THE HIT-NOT® SYSTEM, YOU ACKNOWLEDGE AND AGREE TO BE CONTRACTUALLY BOUND BY THESE WARRANTY TERMS AND CONDITIONS. IF ANY OF THE TERMS OF USE ARE NOT ACCEPTABLE TO YOU, DO NOT INSTALL OR USE THE HIT-NOT® SYSTEM.**

**THE HIT-NOT® SYSTEM IS SIMPLY A TOOL TO BE USED TO ASSIST YOU IN SAFELY OPERATING HEAVY EQUIPMENT. THE HIT-NOT® SYSTEM IS NOT INTENDED AS A SUBSTITUTE FOR, NOR DOES IT REPLACE, SAFE PRACTICES IN OPERATING HEAVY EQUIPMENT. YOUR USE OF THE HIT-NOT® SYSTEM IS SOLELY AT YOUR OWN INDEPENDENT DISCRETION AND RISK.**

### **ACCEPTANCE AND DEFINITIONS.**

**(A) Acceptance of Terms.** These Warranty Terms and Conditions (these “Terms”) are a legal agreement between You, as a purchaser and end user of the System and Frederick Energy Products, LLC. By installing the System or using the System in any way, You are (1) agreeing to be bound by these Terms. If You do not agree with all these terms, do not use OR INSTALL the SYSTEM. YOU MUST RETURN THE SYSTEM TO THE DEALER FROM WHICH YOU PURCHASED THE SYSTEM, IN ACCORDANCE WITH THE DEALER’S POLICIES. This Agreement constitutes the entire and only agreement between FEP and You and supersedes all prior or contemporaneous agreements, representations, warranties and understandings with respect to the System, and the subject matter of this Agreement.

**(B) Definitions.** In this Agreement, “You” and “Your” refer to You as the user of the System. “FEP” “we,” “us” and “our” refer to Frederick Energy Products, LLC and our successors, partners, affiliates, subsidiaries and assigns. “System” refers to the Hit-Not® System purchased by You. “Terms” refers, collectively, to these Warranty Terms and Conditions.

### **LIMITED WARRANTIES; DISCLAIMER.**

**(A) Limited Warranty.** FEP hereby warrants against: (1) defects in the System, either in workmanship or material, and (2) the failure of the System to conform to FEP’s written specifications, for a period of one (1) year after date of delivery to You, in each case; provided that such System has been under proper and normal use at all times during such period. All warranty claims under these Terms must be submitted through the Dealer from which you purchased the System. FEP’s liability is restricted to the replacement or repair of the defective or nonconforming parts alone and does not

include any installation, labor, or expense involved, or other contingent liability. Liability for any components manufactured by third parties but incorporated into FEP Products to be furnished by FEP, shall be limited to the guarantee or liability to FEP of the manufacturer or supplier of such components. FEP is not liable for damages resulting from the use or misuse of the FEP Products.

**(B) Disclaimers.** EXCEPT AS EXPRESSLY SET FORTH ABOVE: (1) NO ADVICE OR INFORMATION, WHETHER ORAL OR WRITTEN, PROVIDED BY OR THROUGH FEP, ANY DEALER OR DISTRIBUTOR, OR ANY THIRD PARTY SHALL IMPLY THE CREATION OF ANY REPRESENTATION OR WARRANTY OF ANY KIND WHATSOEVER BY FEP; (2) THE SYSTEM IS PROVIDED "AS IS" AND WITHOUT ANY WARRANTY OF ANY KIND, EITHER EXPRESS, STATUTORY OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE; (3) FEP DOES NOT REPRESENT OR WARRANT THAT THE SYSTEM WILL BE FUNCTIONAL OR DEFECT-FREE, OR THAT DEFECTS WILL BE CORRECTED; AND (4) FEP HEREBY DISCLAIMS ANY AND ALL LIABILITY OR RESPONSIBILITY FOR THE IMPROPER USE OF THE SYSTEM OR FOR THE INCORRECT OR IMPROPER INSTALLATION OF THE SYSTEM. SOME STATES OR OTHER JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO THE ABOVE EXCLUSIONS MAY NOT APPLY TO YOU. UNDER NO CIRCUMSTANCES WILL FEP BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY YOUR USE OF THE SYSTEM. USE OF THE SYSTEM IS AT YOUR SOLE RISK.

#### **INDEMNIFICATION; RELEASE; LIMITATION OF LIABILITY.**

**(A) Indemnification.** You agree to indemnify and hold FEP, any and all parent, subsidiary, and affiliate organizations, and their respective officers, directors, agents, shareholders, members, managers, advisors, consultants, employees, successors and assigns (collectively, the "Protected Parties") harmless from and against all losses, costs, liabilities, expenses (including reasonable attorneys' fees and expenses), claims, demands, and damages, actual and consequential, of every kind and nature, known and unknown, suspected and unsuspected, disclosed and undisclosed (collectively, "Losses"), that are in any way due to or arising out of Your use of the System, unless caused by the gross negligence or willful misconduct of FEP. FEP reserves the right, at Your expense, to assume the exclusive defense and control of any matter for which You are required to indemnify any of the Protected Parties, and You agree to cooperate with FEP's defense of such claims. FEP will use reasonable efforts to notify You of any such claim, action, or proceeding which is subject to this indemnification upon FEP becoming aware of it.

**(B) Limitation of Liabilities.** IN NO EVENT SHALL FEP, ITS LICENSORS, SUPPLIERS, CONTENT PROVIDERS OR THEIR RESPECTIVE PARENTS, SUBSIDIARIES, AFFILIATES, OFFICERS, DIRECTORS, SHAREHOLDERS, ADVISORS, CONSULTANTS, EMPLOYEES, SUCCESSORS OR ASSIGNS, BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES (INCLUDING BUT NOT LIMITED TO LOSS OF BUSINESS, PROFITS, USE, REVENUE OR OTHER ECONOMIC ADVANTAGE), ARISING OUT OF OR IN CONNECTION WITH THE SYSTEM OR THESE TERMS BASED ON ANY THEORY, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. THE LIMITATION OF DAMAGES SET FORTH ABOVE IS A FUNDAMENTAL ELEMENT OF THE BASIS OF THE BARGAIN BETWEEN US AND YOU. THE SYSTEM WOULD NOT BE PROVIDED FOR SALE TO YOU WITHOUT SUCH LIMITATIONS. IN NO EVENT WILL OUR LIABILITY, OR THE LIABILITY OF OUR LICENSORS, AND OUR RESPECTIVE PARENTS, AFFILIATES, SUBSIDIARIES, OFFICERS, DIRECTORS, SHAREHOLDERS, EMPLOYEES, ADVISORS, CONSULTANTS, SUCCESSORS OR ASSIGNS, TO YOU OR ANY THIRD PARTIES IN ANY CIRCUMSTANCE EXCEED ONE

HUNDRED DOLLARS (US \$100.00). SOME STATES OR OTHER JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU.

**Choice of Law; Dispute Resolution.** The Agreement shall be governed by, and construed in accordance with the laws of the State of Alabama, without regard to its conflicts of law provisions. In the event of any dispute, claim, question or disagreement ("Claim") between You and FEP arising from or relating to Your use of the System, You and FEP will attempt, in good faith, to resolve any Claim within thirty (30) days after written notice of the Claim. Any Claim not so resolved shall be finally settled by binding arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, using the Expedited Procedures. Judgment on the award rendered by the arbitrator(s) may be entered in any court of competent jurisdiction. The arbitrator shall be an individual generally skilled in the legal and business aspects of the subject matter of this Agreement. The arbitrator shall have no authority to impose penalties or award punitive damages. The arbitration shall take place in Madison County, Alabama, and the arbitrator shall apply the law of the State of Alabama and applicable rules of evidence. If all parties and the arbitrator agree, arbitration may take place by telephone or by written communication. Unless the arbitrator otherwise directs, the parties, their representatives, other participants, and the arbitrator shall hold the existence, content, and result of the arbitration in confidence. No action, regardless of form, related to the obligations of the parties under this Agreement may be brought by either party against the other more than one (1) year after the cause of action has accrued. In any proceeding to enforce this Agreement, the prevailing party will have the right, in addition to its other rights hereunder, to recover its reasonable litigation costs and reasonable attorneys' fees.

Nothing in this Section shall preclude any party from seeking equitable relief from a court of competent jurisdiction or exercising any self-help remedies, whether before, during or after the pendency of any arbitration proceeding. The parties agree that taking any such action does not waive any right that either party has to demand arbitration at any time with respect to subsequent or amended disputes claimed or filed against a party after commencement of litigation. BY AGREEING TO THESE TERMS AND CONDITIONS, ALL PARTIES AGREE TO WAIVE ANY RIGHTS TO A JURY OR COURT TRIAL. If any provision of this dispute resolution procedure is held invalid or unenforceable, the remaining provisions shall remain in full force and shall not be affected by the invalidity of any other provision.

By tapping "Accept", you again agree and confirm that you have read and understood these Terms of Service and the [Disclaimer](#).

[Accept](#)

**V. Entire Agreement; Assignment; Miscellaneous.** These Terms constitute the complete and exclusive statement of the agreement between You and us. It supersedes any and all prior or contemporaneous agreement, oral or written, and any other communications, representations, warranties and understanding relating to the subject matter hereof. If there is a conflict between an oral or written representation of any FEP employee or agent, or any Dealer or Distributor employee or agent, and these Terms, these Terms will prevail. These Terms will prevail over other rules and policies on the System. Our failure to enforce any provision of these terms shall not be deemed either a waiver of such provision or a waiver of the right to enforce such provision. If any provision of these Terms is held by an

arbitrator or court of competent jurisdiction to be contrary to law, then such provision shall be construed, as nearly as possible, to reflect the intentions of the parties and the other provisions shall remain in full force and effect. The provision of these Terms which, by their terms should survive termination or expiration of these Terms, shall survive the termination or expiration hereof. FEP may assign this Agreement to any other entity of its choosing, with or without notice to You. You may not assign these Terms to any other party without the prior written consent of FEP. FEP shall not be deemed to have waived any of its rights or remedies unless such waiver is in writing and signed by FEP. No delay or omission on the part of FEP in exercising any rights or remedies shall operate as a waiver of such rights or remedies or any other rights or remedies on future occasions. The section titles in these Terms are solely used for the convenience of the parties and have no legal or contractual significance.

#### **END OF HIT-NOT® WARRANTY TERMS AND CONDITIONS**

## **4 Revision History**

### **4.1 Version 1.0 – October 4, 2013**

Original Release. No revision history.

### **4.2 Version 2.0 – January 21, 2014**

CAM Installation information included.

### **4.3 Version 3.0 – April 10, 2014**

Health information updated

Section 2.10 added