



# HIT-NOT Proximity System

## Range Adjust Tool User's Manual v1.0



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# 1 Overview

The Range Adjust Tool is a supplemental device used with a HIT-NOT Proximity Detection system from Frederick Energy Products. It performs remote adjustments of two parameters for the Magnetic Field Generator (MFG). The two parameters are: (1) MFG audible alarm sound volume and (2) the size of the magnetic field created by the MFG. The adjustment of both of these parameters can also be performed manually at the MFG, but a MFG Range Adjust Tool makes the task easier.

## 1.1 Theory of Operation

Two manually-operated buttons on the side of the Range Adjust Tool provide the capability for selection of either the MFG Audible Sound Level adjustment function or the MFG field size adjustment function; as well as adjusting the values of the parameters.

- Audible Sound Level Mode
  - Mode Selection – MFG Audible Sound Level mode is automatically selected when the Range Adjust Tool is powered ON. The Range Adjust Tool is powered ON when (1) it disconnected from a HIT-NOT® battery charger or (2) when the special plastic plug is removed from the battery charger receptacle. After power-up, the Range Adjust Tool remains in the MFG Audible Sound Level mode until it is mechanically changed to the field size function described later.
  - Sound Level Adjustment – To adjust the sound level volume of the MFG Audible Alarm, the Range Adjust Tool must be in the Danger Zone of the MFG magnetic field. Ideally this location is approximately four feet from the MFG. When the Range Adjust Tool is in the Sound Level Adjustment mode it functions similar to a HIT-NOT® PAD and causes the MFG Audible Alarm to sound continuously. To increase the MFG Audible Alarm Volume, depress/hold the red-colored button on the Range Adjust Tool until the desired sound volume is achieved. Similarly, volume is adjusted downward by depressing/holding the black-colored button.
- MFG Field Size Adjustment Mode
  - Mode Selection – The MFG Field Size Adjustment Mode is initiated by simultaneously depressing/holding the red and black buttons for five seconds. When the mode changes from MFG Sound Level mode to MFG Field Size mode, the MFG Audible Alarm ceases to sound an alarm. After switching the Range Adjust Tool to the MFG Field Size mode, it remains in this mode until the Range Adjust Tool power is powered OFF (either by reinserting the special plastic plug or connecting to a battery charger).

- MFG Field Size Adjustment – To adjust the field size of the MFG, the Range Adjust Tool must be in the Danger Zone of the MFG magnetic field. Ideally this location is approximately four feet from the MFG. Using the Range Adjust Tool the magnetic field produced by the MFG is made larger by depressing the red-colored button. Similarly, field size is made smaller by depressing the black-colored button.

A clicking sound is emitted from the Range Adjust Tool each time a button is depressed. This is an indication that an adjustment signal is being sent to the MFG. If a button is depressed and held longer, clicking sounds increase in frequency and the speed that the field-size increases or decreases speeds up.

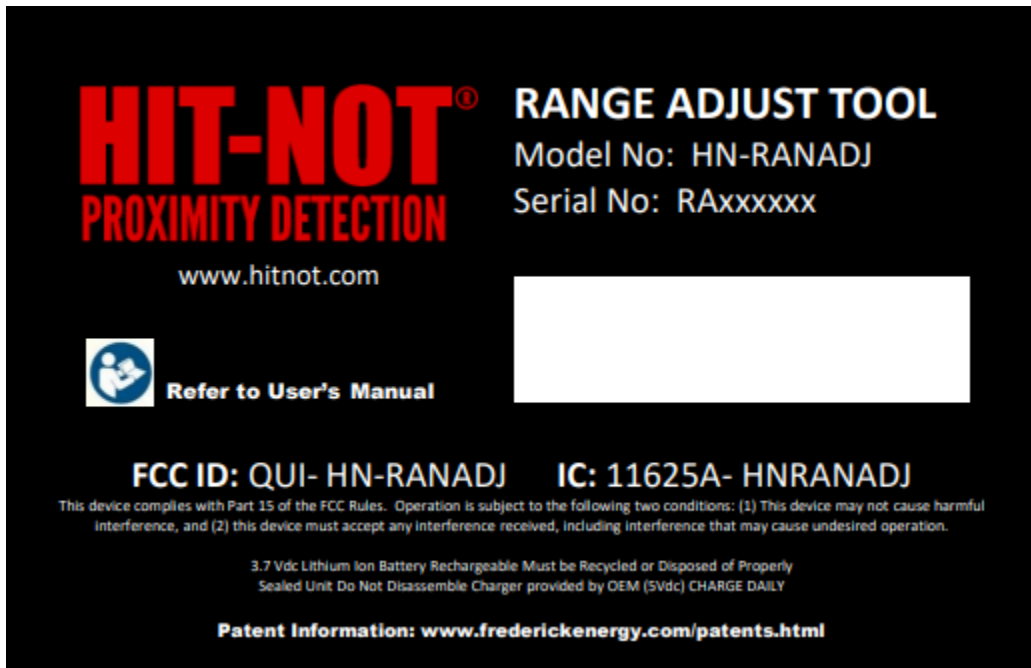
A HIT-NOT® Personal Alarm Device (PAD) should be used to measure the MFG magnetic field size and determine when the desired field size is achieved.

## 1.2 Frequency of Operation

The Range Adjust Tool receives on a frequency of 73 kHz and transmits at 916.48 MHz.

## 1.3 Label Information

The Range Adjust Tool label is located on the top housing opposite of the battery-access side.



Range Adjust Tool Label

## 1.4 FCC/IC Information

The FCC ID for the Range Adjust Tool is QUI-HN-RANADJ 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 Range Adjust Tool, 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 ment 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 Range Adjust Tool is typically a hand-held device is has no specific installation requirements

**NOTE: THE RANGE ADJUST TOOL IS POWERED AT ALL TIMES EXCEPT WHEN ITS BATTERY IS BEING CHARGED OR WHEN THE SPECIAL PLASTIC PLUG IS INSTALLED IN THE BATTERY CHARGER RECEPTACLE.**

#### 2.1.1 Inoperability Warning

When a Range Adjust Tool battery voltage drops to approximately 3.5 Vdc or below while connected to a Range Adjust Tool, the Range Adjust Tool will signal a low battery condition. This alert is two rapid beeps of the sounder every 1.6 seconds.

## 2.2 Charging

The 3.7V Li-ion/Polymer Battery Charger plugs into the charging port and is the standard plug supplied with the battery charger. The chargers are designed to operate with input voltage from 100 to 240 Vac, 50/60 Hz. They provide an output current of 0.5 A at a voltage of 4.2 Vdc. A red LED light on the charger indicates that the battery needs charging and the green light means the battery is fully charged. When the plug is pulled, the sounder on the Range Adjust Tool activates for approx. 2 seconds to indicate it is in proper working order.

## 2.3 Alerts

If the battery voltage in the Range Adjust Tool drops to approximately 3.5 Vdc the Range Adjust Tool will signal a low battery condition with two rapid beeps every 1.6 seconds.

## 2.4 Maintenance

The Lithium Ion Battery in the Range Adjust Tool has a finite life and eventually will need replacement. Battery life is based on the number of times recharged. There are no published data about the exact number of charges the battery can undergo before its life is over, but literature suggests it's at least 300 charges. Batteries in the Range Adjust Tool are designed to be replaced by the user. Only use an approved, protected Lithium Ion replacement battery. Contact HIT-NOT for the approved replacement battery list.

## 2.5 Adjustments

Factory settings of the Range Adjust Tool are expected to be stable and change very little with time. Adjustment capability of the Range Adjust Tool by the user is not available for field use.

## 2.6 Interferences

There are instances when the magnetic field generated from other sources such as an electrical panel, motorized machinery, large conductor cables etc. can generate intermittent alarm signals that are picked up by the Range Adjust Tool. However, operating the Range Adjust Tool at the ideal distance from the MFG should essentially eliminate this potential. If extraordinarily strong magnetic interferences occur, temporarily moving the vehicle with the MFG to a more favorable magnetic interference environment.

## 2.7 Range Adjust Tool Specifications

Part Number: HN-RANADJ

Size: 3.81" x 2.92" / 97mm x 74.2mm

Weight: 4.7oz./ 133g

Input Voltage: 3.5 to 4.2 VDC

Magnetic Field Frequency: none

Receiver Frequency: 73 kHz signal

Transmitter Frequency: 916.48 MHz

Transmitter Power: 0.001W (typical)

Range Adjust Tool Battery: 3.7 VDC Lithium Ion

Range Adjust Tool Battery Capacity: 800 mAh

Charging Specifications: 0.75A at 4.25V max

Only use Lithium Ion Battery Charger

Operating Temperature Range: -30°C to + 70°C ; -22°F to 158°F

Environmental Considerations: 85 dBa minimum

Shipping Considerations: Contains a Lithium Ion Battery (packed in equipment)

## 3 Revision History

### 3.1 Version 1.0 – January 28, 2021

Original Release. No revision history.