



SEMS II

SCOTT ELECTRONIC MANAGEMENT SYSTEM REPEATER UNIT

FOR USE WITH THE SEMS II USER ACCOUNTABILITY SYSTEM AND 3M SCOTT PAK-TRACKER LOCATOR SYSTEM

DESCRIPTION

The purpose of the SEMS II REPEATER UNIT is to provide a stationary unit in the SEMS II Accountability System mesh network to maintain a consistent link between the base station and all of the SEMS II Personal Distress Alarms (PDA's) that might otherwise be out of range of the Base Station. The SEMS II REPEATER UNIT can be placed up to one-half mile line-of-sight from the base station. When logged on, all the SEMS II Personal Distress Alarms (PDA's) Portable Units communicate to the Base Station directly and/or through other logged on units forming a communications "mesh network" to the Base Station. The SEMS II REPEATER UNIT extends the range for the PDA's furthest away from the Base Station. Because of this mesh network system, the signal strength of each user as displayed on the Base Station may change as the network constantly re-adjusts to the movement of the users.

When activated, the SEMS II REPEATER UNIT appears on the SEMS II Base Station Display as a logged in user, much like a SEMS II PDA, except that the user detail Air Pressure will display 0 psi and the Resources display will not show a cylinder pressure at all.

The SEMS II REPEATER UNIT also contains the 3M SCOTT PAK-TRACKER locator system functionality similar to the SEMS II PDA's. This will facilitate finding the SEMS II REPEATER UNIT either during or after an incident. When the Base Station Operator sends an EVAC IND message to the logged in SEMS II REPEATER UNIT, the unit will begin transmitting a locator signal under the ID for the SEMS II REPEATER UNIT much the same as a PASS sends a locator signal when the PASS is activated. The SEMS II REPEATER UNIT will also produce an audible indication



as loud as a PASS device. When the SEMS II REPEATER UNIT is found, the searcher can Acknowledge the EVAC signal to clear the signal from the Base Station display and from the PAK-TRACKER display.

For identification purposes, the SEMS II REPEATER UNIT comes factory programmed with an eight digit ID number that will be displayed when searching with the PAK-TRACKER locator system. The PAK-TRACKER locator system will display the default eight digit ID number which appears on a label inside the SEMS II REPEATER UNIT case. This default number can be reprogrammed using the 3M SCOTT Pak-Link Computer Interface. Refer to the Pak-Link Computer Interface Installation and Use Instructions, 3M SCOTT P/N 595123-01, for complete details.

WARNING

THE 3M SCOTT SEMS II USER ACCOUNTABILITY SYSTEM IS INTENDED FOR USE WITH PROPERLY EQUIPPED 3M SCOTT SELF-CONTAINED BREATHING APPARATUS (SCBA) WHICH MAY SUPPORT HUMAN LIFE IN HAZARDOUS ATMOSPHERES. FAILURE TO CAREFULLY READ AND UNDERSTAND THE FOLLOWING INSTRUCTIONS MAY RESULT IN SERIOUS INJURY OR DEATH TO THE SCBA USER.

USE OF THE SEMS II REPEATER UNIT WILL REQUIRE MODIFICATION OF THE RESPIRATOR "REGULAR OPERATIONAL INSPECTION PROCEDURES" AND WILL REQUIRE TRAINING OF THE RESPIRATOR USER IN THE USE OF SUCH EQUIPMENT.

THE FOLLOWING INSTRUCTIONS SUPPLEMENT BUT DO NOT REPLACE THE OPERATING AND MAINTENANCE INSTRUCTIONS SUPPLIED WITH EACH RESPIRATOR.

SAFETY LISTINGS

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Changes or modifications not expressly approved by 3M could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules and Innovation, Science and Economic Development Canada's (ISED) license-exempt Radio Standards Specifications (RSS).

Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesirable operation.

(1) l'appareil ne doit pas produire de brouillage, et
(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

RF EXPOSURE STATEMENT

To ensure compliance with FCC and ISED RF exposure requirements this device must be installed to provide a minimum of 20cm between the device and people.

Pour garantir la conformité aux exigences d'exposition RF de la FCC et d'ISED Canada, cet appareil doit être installé de manière à laisser un minimum de 20 cm entre l'appareil et les personnes.

BATTERY INSTALLATION

WARNING

THE SEMS II ACCOUNTABILITY SYSTEM IS INTENDED TO ASSIST IN LOCATING A PERSON WHO MAY BE IN A LIFE THREATENING SITUATION. CAREFULLY FOLLOW THE INSTRUCTIONS FOR OPENING, CHANGING THE BATTERIES AND RE-CLOSING THE BATTERY COMPARTMENT. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.

WARNING

BATTERIES MUST ONLY BE CHANGED IN AN AREA KNOWN TO BE NONFLAMMABLE. CHANGING THE BATTERIES IN A FLAMMABLE ATMOSPHERE MAY CAUSE AN IGNITION WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

The SEMS II REPEATER UNIT requires six (6) "AA" cell batteries for operation.

The batteries should be replaced only by a trained maintenance technician in a clean area known to be nonflammable. Replace batteries as follows:

1. When replacing batteries place the SEMS II REPEATER UNIT in a clean, non-hazardous area.
2. Open the SEMS II REPEATER UNIT case by lifting the two (2) front latches and opening the cover.
3. Use a screw driver to remove the Battery Housing Cover as shown in FIGURE 1. Carefully remove the cover and set aside.

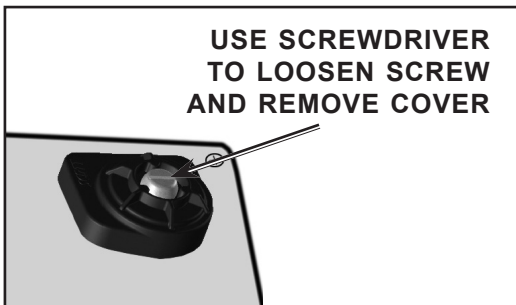


FIGURE 1

4. Remove used batteries from battery compartment by sliding them out of the battery compartment.
5. Install six (6) fresh new "AA" batteries of the same type. **Always replace all batteries at the same time.**

The battery holder is marked with the style and orientation of the batteries required.

Use six (6) each of one of the following 1.5 volt AA batteries:

- Duracell⁵ Alkaline MN1500
- Duracell Alkaline MX1500
- Duracell Alkaline PC1500
- Eveready Energizer⁶ Alkaline EN91
- Eveready Energizer Alkaline E91.

Do not mix batteries. Verify correct orientation of batteries as shown on label inside the battery holder.

6. The battery cover must be installed so that it is water tight after replacement. Clean the sealing rib around battery compartment and sealing face of the cover, shown in FIGURE 2, by wiping with a clean damp cloth to remove any dirt or foreign matter which might prevent a proper seal. Check cover gasket for tears or cuts. If damage is found, remove unit from service and tag for repair by authorized personnel.



FIGURE 2

7. Install battery cover and tighten the cover screw until snug. **DO NOT OVER TIGHTEN.**
8. Close the SEMS II REPEATER UNIT case and secure the two (2) front latched

AFTER REPLACEMENT OF BATTERIES, PERFORM A REGULAR OPERATIONAL INSPECTION BEFORE RETURNING THE SEMS II REPEATER UNIT TO SERVICE.

REGULAR OPERATIONAL INSPECTION OF THE SEMS II REPEATER UNIT

Inspect and test the 3M SCOTT SEMS II REPEATER UNIT along with the inspection and test of the 3M SCOTT SCBA respirator and SEMS II Accountability System before each use. A SEMS II Base Station and user instruction 3M SCOTT P/N 595186-01 are required for inspection. To inspect the PAK-TRACKER functionality, a PAK-TRACKER Hand-Held Receiver is required along with the PAK-TRACKER User Instructions, 3M SCOTT P/N 595102-01. Include the following inspection procedures with the REGULAR OPERATIONAL INSPECTION procedures defined in your respirator instructions. If any malfunction of the respirator, the SEMS II REPEATER UNIT, the PAK-TRACKER Locator System, or the SEMS II Accountability System is noted during the inspection, remove the defective equipment from service and tag for repair by authorized personnel.

INSPECT THE SEMS II REPEATER UNIT

Inspect the SEMS II REPEATER UNIT as follows:

1. Visually inspect the SEMS II REPEATER UNIT for cracks, wear or other damage. If any damage is found, remove the unit from service and tag for repair by qualified personnel.
2. The ON/OFF button is located on the front of the SEMS II REPEATER UNIT between the two indicator lights. Press the ON/OFF button once to start the unit. The Status Light will flash WHITE three (3) times then flash GREEN to indicate the unit is on and the batteries are good. The RANGE Light will slowly flash RED until the unit detects an active Base Station.

NOTE

IF THE BATTERIES NEED TO BE REPLACED, THE STATUS LIGHT WILL SLOWLY FLASH RED AND THE UNIT WILL EMIT A SINGLE CHIRP EVERY TWO (2) SECONDS. REPLACE THE BATTERIES BEFORE PROCEEDING WITH THE REGULAR OPERATIONAL INSPECTION. REFER TO THE BATTERY INSTALLATION SECTION OF THIS INSTRUCTION.

WARNING

FOLLOW REGULAR OPERATIONAL INSPECTION PROCEDURE EXACTLY. IF THE SEMS II REPEATER UNIT DOES NOT ACTUATE, OR IF ANY OTHER FEATURE DOES NOT OPERATE AS DESCRIBED OR IF ANY OTHER OPERATIONAL MALFUNCTION IS NOTED, DO NOT USE THE UNIT.

WARNING

IN SEVERAL OF THE INSPECTION PROCEDURES DESCRIBED A FULL ALARM WILL BE OBSERVED. THE FULL ALARM CONDITION INCLUDES AN AUDIBLE TONE THAT CAN EXCEED 95 DBA AT 3 METERS (9.9 FT.). TO PREVENT POSSIBLE HEARING DAMAGE DURING TEST, IMMEDIATELY RESET THE ALARM ON VERIFICATION THAT IT IS FUNCTIONING PROPERLY. WEAR HEARING PROTECTION IF PROLONGED OR REPEATED EXPOSURE TO A FULL ALARM CONDITION IS ANTICIPATED.

WARNING

THE PROPER OPERATION OF THE LOCATOR SYSTEM CANNOT BE CHECKED WITHOUT CHECKING ALL COMPONENTS OF THE SYSTEM TOGETHER. THE REGULAR OPERATIONAL INSPECTION MUST INCLUDE THE HAND HELD RECEIVER AND THE BASE STATION WORKING WITH EACH OTHER TO CONFIRM PROPER OPERATION. FAILURE TO PROPERLY INSPECT THE COMPLETE SYSTEM MAY RESULT IN FAILURE OF ONE COMPONENT WHICH COULD LEAD TO SERIOUS INJURY OR DEATH.

WARNING

IF THE LOW BATTERY INDICATION (ONE STEADY CHIRP EVERY TWO (2) SECONDS WITH NO FLASHING LIGHTS) OCCURS AT ANY TIME DURING REGULAR OPERATIONAL INSPECTION, DO NOT USE THE UNIT. CHANGE THE BATTERIES IMMEDIATELY AND REPEAT THE REGULAR OPERATIONAL TEST OR TAKE THE UNIT OUT OF SERVICE UNTIL THE BATTERIES ARE CHANGED AND THE REGULAR OPERATIONAL TEST IS SUCCESSFULLY PERFORMED.

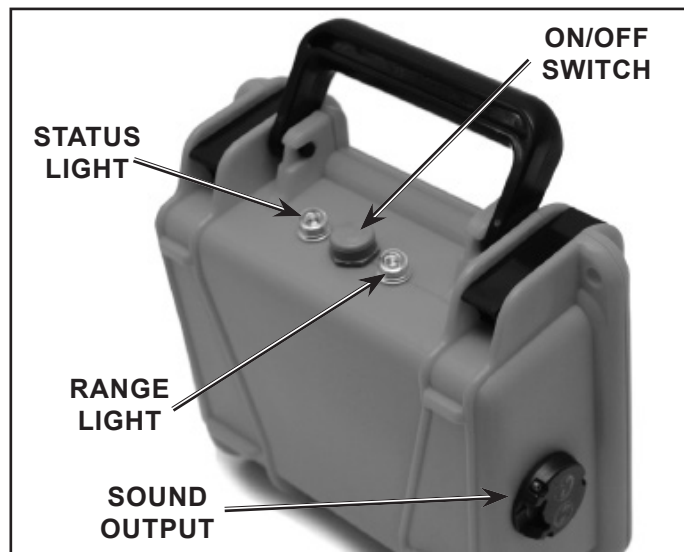


FIGURE 3

INSPECT OPERATION OF THE SEMS II REPEATER

1. Turn on the Base Station computer with the 3M SCOTT SEMS II MESH GATEWAY Software with the PCMCIA Communications Card or USB GATEWAY Communications Interface installed. Refer to the Base Station Instructions. Position the Base Station near the SEMS II REPEATER UNIT.
2. When the SEMS II REPEATER UNIT establishes communication with the Base Station, the RANGE Light will glow solid GREEN and the REPEATER will appear on the Base Station Display Screen as a Resource/ID number as programmed on the REPEATER (see the PROGRAMMING THE SEMS II REPEATER UNIT ID section of this instruction). The Resource will not have an entry for "Air" indicating that this is a REPEATER UNIT and not an SCBA on a respirator user.

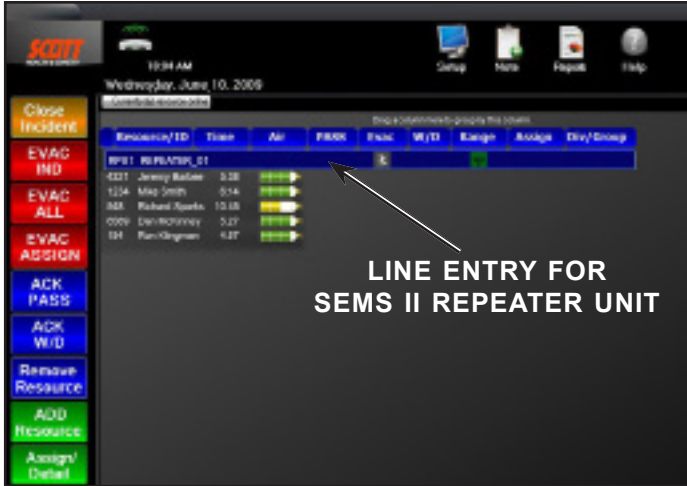


FIGURE 4

3. To test the operation of the SEMS II REPEATER UNIT, proceed as follows:
 - a) Select the Resource entry for the SEMS II REPEATER UNIT and choose "EVAC" (either EVAC IND or EVAC ALL). The EVAC Icon will appear in the Base Station Display for the REPEATER UNIT.
 - b) The RANGE light on the SEMS II REPEATER UNIT shall change to BLUE and the unit shall emit the EVAC sound.
 - c) To acknowledge the EVAC on the REPEATER UNIT, press the ON/OFF Button twice. The EVAC icon on the Resource entry for the REPEATER UNIT will change to GRAY on the Base Station Display.
 - d) To turn OFF the SEMS II REPEATER UNIT, press the ON/OFF Button twice again.

INSPECT THE SEMS II REPEATER WITH THE PAK-TRACKER HAND-HELD UNIT

Inspect the SEMS II REPEATER UNIT with the PAK-TRACKER Hand-Held Receiver as follows:

1. While the SEMS II REPEATER UNIT is still recognized by the SEMS II Base Station, turn on the 3M SCOTT PAK-TRACKER Hand Held Receiver according to the operating instructions provided with the unit.
2. Repeat steps 3a and 3b above to place the SEMS II REPEATER UNIT in EVAC mode. The SEMS II REPEATER UNIT unique identification number shall appear on the PAK-TRACKER Hand-Held Receiver.
3. Use the SCROLL button on the PAK-TRACKER Hand-Held Receiver to highlight the active number and press the ENTER button on the PAK-TRACKER Hand-Held Receiver.
4. Point the Hand-Held Receiver directly at and in close proximity to the SEMS II REPEATER UNIT. The signal strength displayed will be at its highest value.
5. Repeat steps 3c above to acknowledge finding the SEMS II REPEATER UNIT. The unit shall no longer show as active on the PAK-TRACKER Hand-Held Receiver.
6. To turn OFF the SEMS II REPEATER UNIT, press the ON/OFF Button twice again.

USE OF THE SEMS II REPEATER UNIT

WARNING

TRAINING IS REQUIRED BEFORE USE OF THIS EQUIPMENT IN A HAZARDOUS SITUATION. THE TRAINING MUST INCLUDE AN UNDERSTANDING OF THE LIMITATIONS OF THE EQUIPMENT ALONG WITH EXTENSIVE PRACTICE WITH THE SYSTEM IN A VARIETY OF ENVIRONMENTS. USE OF THIS EQUIPMENT MUST BE A PART OF A COMPLETE PERSONNEL ACCOUNTABILITY SYSTEM. ALWAYS UPDATE TRAINING WITH EACH NEW PIECE OF EQUIPMENT. USE OF THIS EQUIPMENT WITHOUT PROPER TRAINING MAY PLACE THE USERS AT HIGHER RISK IN DANGEROUS SITUATIONS WHICH COULD RESULT IN SERIOUS INJURY OR DEATH.

This equipment must be used in accordance with your incident management procedures and your complete respiratory protection program. Refer to the user instructions for both the 3M SCOTT SEMS II BASE STATION, 3M SCOTT P/N 595186-01 and the instructions for use of a 3M SCOTT SCBA equipped with the SEMS II PASS DEVICE, 3M SCOTT P/N 595166-01 for complete details of operation of the system.



FIGURE 5

CONSIDER THE FOLLOWING WHEN USING THE SEMS II REPEATER UNIT:

The SEMS II REPEATER UNIT communication signals will *pass through* some materials, *reflect off* some materials, and be *absorbed by* others.

The communication signals will usually *pass through*:

- openings such as gaps, holes, stairways, windows, or elevator shafts
- glass,
- wood,
- light building materials.

The communication signals will *reflect off*:

- metal, including structural framework
- large metal objects,
- concrete walls or floors,
- brick or concrete block construction.

The communication signals will be *absorbed by*:

- the Human Body

Use the SEMS II REPEATER UNIT as follows:

1. Verify that the SEMS II Base Station is on and functioning properly.
2. Press the ON/OFF button once to start the unit. The Status Light will flash WHITE three (3) times then flash GREEN to indicate the unit is on and the batteries are good. The RANGE Light will slowly flash RED until the unit detects an active Base Station.
3. When the SEMS II REPEATER UNIT establishes communication with the Base Station, the Status Light will slowly flash GREEN and the REPEATER will appear on the Base Station Display Screen as a Resource/ID number as programmed on the REPEATER. The Resource will not have an entry for "Air" indicating that this is a REPEATER UNIT and not an SCBA on a respirator user.
4. Assess the incident to determine the best place to locate the SEMS II REPEATER UNIT. For best results, the SEMS II REPEATER UNIT should have a clear line of sight to the SEMS II Base Station. Depending on the structure, this may be just inside the entrance, or located along the path followed by the respirator users as they perform their operations.
5. After completion of operations, remove the SEMS II REPEATER UNIT and press the ON/OFF button twice to turn OFF the unit.
6. If the SEMS II REPEATER UNIT cannot be found, use the 3M SCOTT PAK-TRACKER to find the unit as follows:
 - a) Select the Resource entry for the SEMS II REPEATER UNIT and choose "EVAC" (either EVAC IND or EVAC ALL). The EVAC Icon will appear in the Base Station Display for the REPEATER UNIT.
 - b) The RANGE light on the SEMS II REPEATER UNIT shall change to BLUE and the unit shall emit the EVAC sound.
 - c) On the PAK-TRACKER Hand-Held Receiver, use the SCROLL button to highlight the ID number for the SEMS II REPEATER UNIT and press the ENTER button on the PAK-TRACKER Hand-Held Receiver.
 - d) Refer to the PAK-TRACKER USER INSTRUCTION, 3M SCOTT P/N 595102-01 for complete details of use of the PAK-TRACKER Hand-Held Receiver. Use the Hand-Held Receiver to follow the signal from the SEMS II REPEATER UNIT until the signal strength displayed is at its highest value.
 - e) Once the SEMS II REPEATER UNIT is found, press the ON/OFF Button twice to acknowledge the EVAC on the REPEATER UNIT.
 - f) To turn OFF the SEMS II REPEATER UNIT, press the ON/OFF Button twice again. The Resource entry for the REPEATER UNIT will be removed from the Base Station Display.

TO UPDATE THE SEMS II REPEATER UNIT ID

The Identification Number for the SEMS II REPEATER UNIT can be changed using the 3M SCOTT Pak-Link Computer Interface and the 3M SCOTT PAK-LINK ID UPDATED software. Refer to the 3M SCOTT PAK-LINK COMPUTER INTERFACE INSTALLATION AND USE INSTRUCTIONS, 3M SCOTT P/N 595123-01 for complete details.

To update the ID of a SEMS II REPEATER UNIT, proceed as follows:

1. To start the Pak-Link ID Updater software, go to the WINDOWS START Menu and select "All Programs." Look in the "Scott Health & Safety" program folder to find the shortcut to the "Pak-Link ID Updater" program. See FIGURE 6.

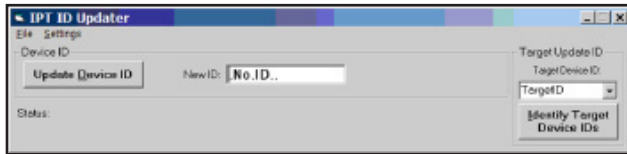


FIGURE 6

2. Select "Settings" and "COM Port Selection." This will open a "Communication Settings" window. Select the COM Port that was set in Installation. See FIGURE 7.

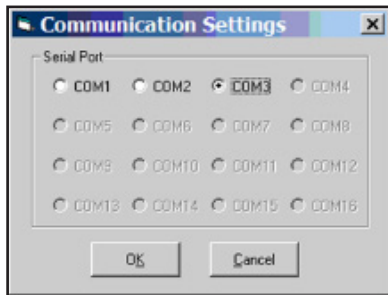


FIGURE 7

3. Position the SEMS II REPEATER UNIT and the PAK-LINK Computer Interface conveniently close to you and access to the computer. The PAK-LINK Computer Interface can communicate with an activated SEMS II REPEATER UNIT as far as twenty feet away, so make sure no other REPEATER units or 3M SCOTT respirators are being activated in the immediate area.
4. Make sure the SEMS II REPEATER UNIT is OFF.
5. Verify that the batteries in the SEMS II REPEATER UNIT are fresh.
6. On the SEMS II REPEATER UNIT, press and hold the ON/OFF button for approximately eight (8) seconds. The lights on the SEMS II REPEATER UNIT will flash GREEN and then RED. When the RED lights begin flashing alternately, the SEMS II REPEATER UNIT is in Transmit Mode. You have approximately thirty (30) seconds to complete the Update before the SEMS II REPEATER UNIT times-out.

7. Select "Identify Target Device." After a few seconds, the screen will display a list of the ID numbers for all units that are in Transmit Mode in the immediate area. Select the ID number for the unit you wish to Update. See FIGURE 8.

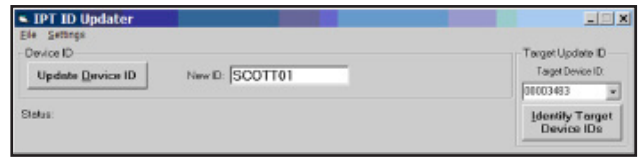


FIGURE 8

8. Type in the new ID. Use any combination of numbers and letters (upper and lower case) up to a maximum of eight (8) characters long. Click "Update Device ID." See FIGURE 9. If you type in too many characters, a RED Status screen will appear.

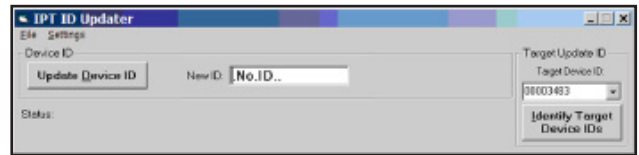


FIGURE 9

9. If the SEMS II REPEATER UNIT times-out, you will see the screen shown in FIGURE 9. Return to Step 3 to reactivate the Transmit Mode and proceed as above.



FIGURE 10

10. When the Update is successful, you will see the screen shown in FIGURE 11.

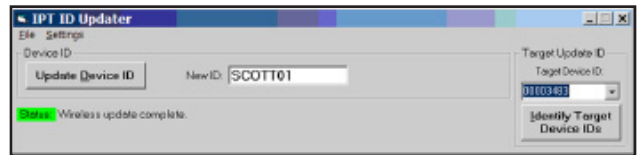


FIGURE 11

11. After completing the ID update, double-click the ON/OFF button on the SEMS II REPEATER UNIT to deactivate the transmitter.

NOTE

IF NO ACTION IS TAKEN FOR THIRTY SECONDS AFTER THE DOWNLOAD IS COMPLETE, THE SEMS II REPEATER UNIT WILL TIME OUT AND DEACTIVATE ITSELF.

12. Mark the new ID number on a label somewhere on the SEMS II REPEATER UNIT in some indelible manner.
13. To close down the 3M SCOTT Pak-Link ID Updater software, click the "X" in the upper right hand corner of the window.

CLEANING, MAINTENANCE, AND STORAGE

Clean the exterior of the SEMS II REPEATER UNIT by wiping with a damp sponge and thoroughly wiping dry. The Signal Light lens on the front of the unit, shown in FIGURE 3, should be cleaned after every use to insure maximum light intensity at all times. Do not use solvents for cleaning or attempt to paint or apply decals to the exterior surfaces of the SEMS II REPEATER UNIT.

If during use, the SEMS II REPEATER UNIT is suspected of being contaminated by a hazardous substance, the contaminant must be identified and properly removed or the contaminated component(s) must be replaced before next use. Dispose of the contaminant or the contaminated component(s) in accordance with applicable regulatory requirements.

Except for the replacement of batteries, no attempt shall be made to do maintenance or to make adjustments or repairs beyond the scope of this instruction manual without proper training.

Draft

EXPORT AND IMPORT

The international transport of the 3M SCOTT SEMS II Accountability System and portions thereof is regulated under United States export regulations and may be regulated by the import regulations of other countries.

If you have any questions or concerns regarding these regulations, contact 3M SCOTT at 1-800-247-7257 (or 704-291-8300 outside the continental United States).

QUESTIONS OR CONCERNS

If you have any questions or concerns regarding use of this equipment, contact your authorized 3M SCOTT distributor, or contact 3M SCOTT at 1-800-247-7257 (or 704-291-8300 outside the continental United States).



SCOTT™
Fire & Safety

4320 Goldmine Road
Monroe, NC 28110 USA
Telephone: (704) 291-8300
Technical Support: (800) 247-7257
Web: www.3MScott.com