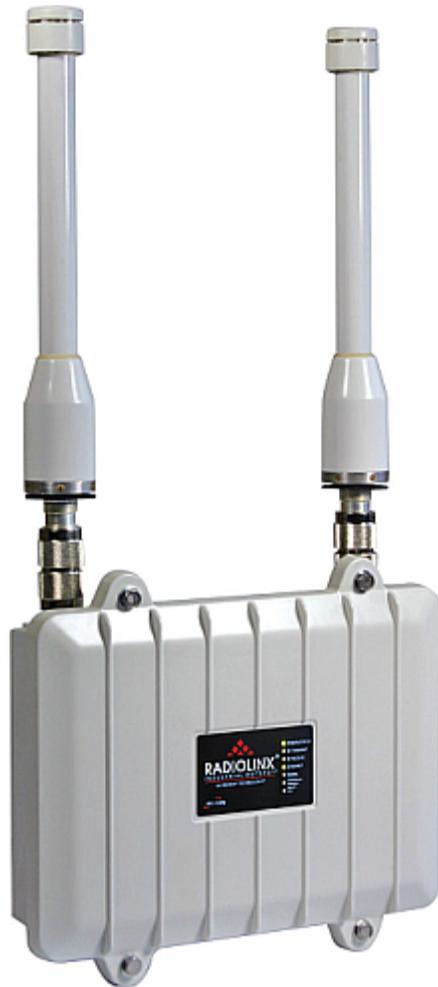# ProSoft®
TECHNOLOGY

Where Automation Connects.

RadioLinx®

RLXIB-IHW-66

802.11a,b,g

Industrial Hotspot

May 18, 2009

SETUP GUIDE

United States FCC & Industry Canada rules

FC
OQ7IHW

Industry Canada / Industrie Canada
3656A-IHW

Note: 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.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: The device may not cause harmful interference, and it must accept any interference received, including interference that may cause undesired operation.
This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

CAUTION: Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Antenna spacing requirements for user safety

It is important to keep the radio's antenna a safe distance from the user. To meet the requirements of FCC part 2.1091 for radio frequency radiation exposure, this radio must be used in such a way as to guarantee at least 20 cm between the antenna and users. Greater distances are required for high-gain antennas. The FCC requires a minimum distance of 1 mW *cm2 power density from the user (or 20 cm, whichever is greater).
If a specific application requires proximity of less than 20 cm, the application must be approved through the FCC for compliance to part 2.1093.
The installer of this radio equipment must ensure that the antenna is located or pointed in such a way that it does not emit RF fields in excess of Health Canada limits for the general population; refer to Safety Code 6, obtainable from Health Canada.
To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

Regulatory Approvals

Wireless Approvals

FC
OQ7IHW

Industry Canada / Industrie Canada
3656A-IHW

Visit our web site at http://www.prosoft-technology.com for current wireless approval information.

Ordinary Locations	Hazardous Locations
CSA 243333	**Ex** ATEX Zone 2 Category 3
ANSI/CSA - IEC60950-1/C22.2 No. 0-M91	

RLXIB-IHW-66: ATEX Approval

II 3 G
Ex nA IIC T6 X
-30C° <= Ta <60°C
ProSoft Technology, Inc., Bakersfield, CA USA
Model: RLXIB-IHW-66
S/N: XXXXXXXXXX

Caution:

Read instructions before operating in Hazardous Areas
N. America

Product name: RLXIB-IHW-66
Safety Warning Statements
Explosive Atmosphere

Power, Input, and Output (I/O) wiring must be in accordance with the authority having jurisdiction

A   Warning – Explosion Hazard – Do not make or break connections in an explosive atmosphere.
B   Warning – DO NOT OPEN WHEN ENERGIZED.

European CE certification

The radio modem has been approved for operation under the RTT&E directive, passing the following tests: ETS300-826 (EMC), ETS300-328 (Functionality), and EN60950 (Safety). LVD directive.
The following is the appropriate label that is applied to the radio modem product line to indicate the unit is approved to operate with CE certification:

The following is the appropriate label that is applied to the radio modem product line shipping package to indicate the unit is approved to operate with CE certification:

```
AUS    B     DK     FIN

F      D     GR     IRE

I      LUX   NL     P

E      S     UK
```

Note: Member states in the EU with restrictive use for this device are crossed out. This device is also authorized for use in all EFTA member states (CH, ICE, LI, and NOR).
IMPORTANT: This device is a 2.4-GHz, low-power RF device intended for office and home use in all EU and EFTA member states, except in France where restrictive use applies.

Connecting Power to the RLXIB-IHW-66 Radio

The radio shall be installed by trained personnel only, as outlined to the installation instructions provided with each radio.

The equipment shall be installed by a qualified installer/electrician. The installer/electrician is responsible for obtaining a secured ground connection between the lug terminal on the surge protector to a verified common ground point using a minimum 18 gauge wire. This must be done when attaching power lines to the radio during installation. .

A solid ground connection should be verified using a meter prior to applying power to the radio. Failing to secure a proper ground could result in serious injury or death as a result of a lightning strike.

Your Feedback Please

We always want you to feel that you made the right decision to use our products. If you have suggestions, comments, compliments or complaints about the product, documentation or support, please write or call us.

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RLXIB-IHW-66 Setup Guide
May 18, 2009

ProSoft Technology® Product Documentation

In an effort to conserve paper, ProSoft Technology no longer includes printed manuals with our product shipments. User Manuals, Datasheets, Sample Ladder Files, and Configuration Files are provided on the enclosed CD, and are available at no charge from our web site: http://www.prosoft-technology.com

Printed documentation is available for purchase. Contact ProSoft Technology for pricing and availability.

Asia Pacific: +603.7724.2080
Europe, Middle East, Africa: +33 (0) 5.3436.87.20
Latin America: +1.281.298.9109
North America: +1.661.716.5100

Contents

1   Before You Begin

Your RLXIB-IHW-66 Industrial Hotspot is shipped with the following:
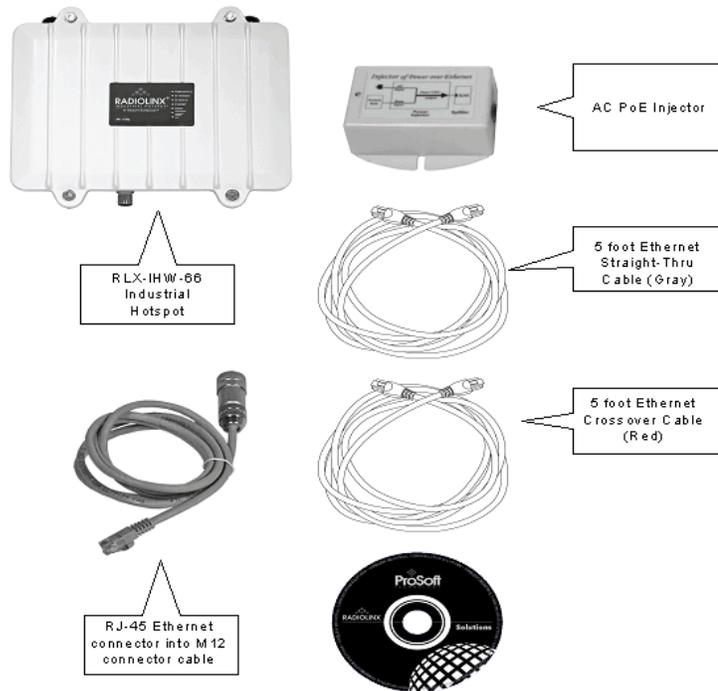
In addition, you will need:

- A personal computer equipped with an Ethernet port
- Static IP address, Subnet Mask and Gateway information for each RLX device you plan to install. You can obtain this information from your system administrator.

Note: This Startup Guide is designed for use with two RLXIB-IHW-66 radios. One radio will be setup as a Master (AP) while the other radio will be set up as a remote repeater.

2   Install the IH Browser Configuration Tool

1   Insert the ProSoft Solutions CD in your CD-ROM drive. On most computers, a menu screen will open automatically. If you do not see a menu within a few seconds, follow these steps:

   a   Click the Start button, and then choose Run.
   b   In the Run dialog box, click the Browse button.
   c   In the Browse dialog box, click "My Computer". In the list of drives, choose the CD-ROM drive where you inserted the ProSoft Solutions CD.
   d   Select the file **prosoft.exe**, and then click Open.
   e   On the Run dialog box, click OK.

2   On the CD-ROM menu, select Setup Software under RLXIB-IHW-66 Industrial Hotspot. This action opens the Setup Wizard for IH Browser.
3   Follow the instructions on the installation wizard to install the program with its default location and settings.
4   When the installation finishes, you may be prompted to restart your computer if certain files were in use during installation. The updated files will be installed during the restart process.

3   Start IH Browser

To start IH Browser

1   Click the Start button, and then choose Programs.
2   In the Program menu, navigate to ProSoft Technology.
3   In the ProSoft Technology menu, navigate to RadioLinx.
4   Click RadioLinx IH Browser.
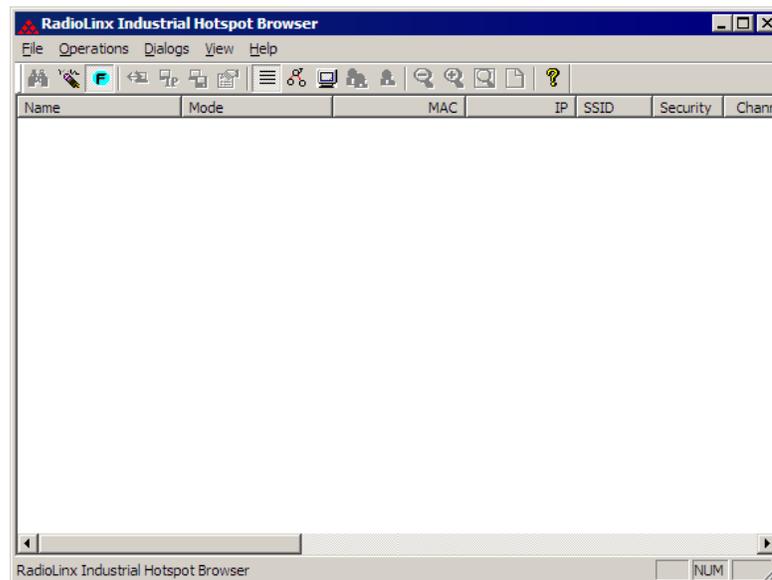
The window lists all the radios your computer can access. The MAC ID number is
essentially the serial number of the radio; this number is also printed on the side
of the radio. If a radio listing does not appear in the window, select Scan from the
File menu. If you still do not see a radio listing, see Troubleshooting.

4   Plug In the Cables

You can configure the RLXIB-IHW-66 using the Ethernet port on the underside of the radio.

- If you are connecting to the radio through an Ethernet hub or switch, use the 2 gray (straight-through) cables.
- If you are connecting to the radio directly from your PC without going through an Ethernet hub or switch, you must use the red (crossover) cable and a gray (straight-through) cable.

Note: After you plug in the Ethernet cable (which supplies both power and connectivity), the radio performs a startup procedure that includes a self-test, loading the main program, and initializing the radio. This startup procedure can take up to two minutes.

After the startup procedure has completed successfully, the Power/Status LED should be green, meaning that the radio has power. The Ethernet LED should also be green, meaning that the Ethernet connection is working. The RF Transmit and RF Receive LEDs should blink.

For information on making connections, see Radio power requirements and Cable specifications.

5   Detecting the Radio

After the radio has completed its startup procedure, the radio will appear in the IH Browser window.
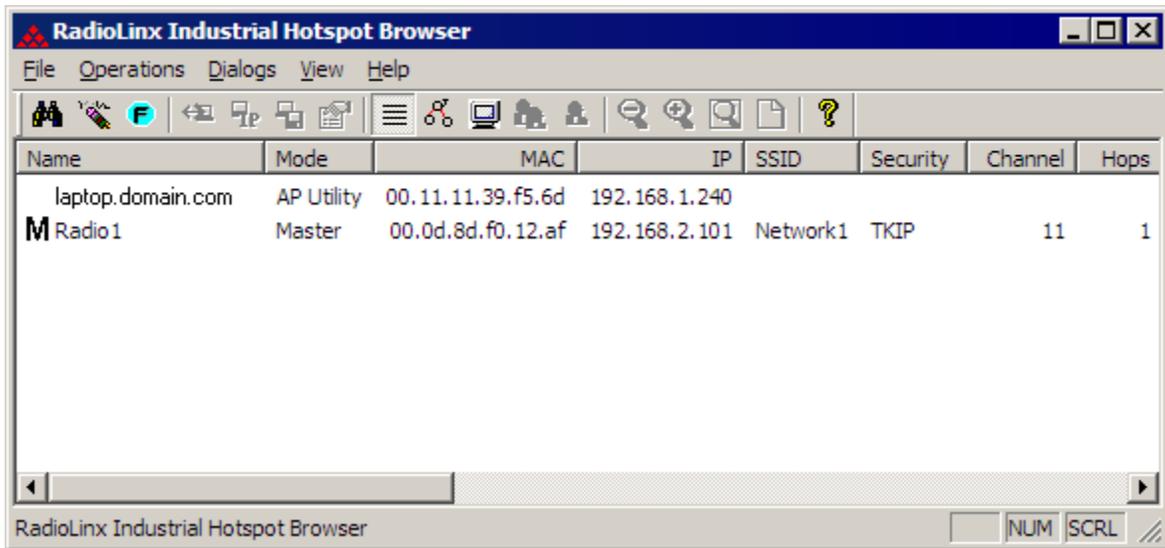
The window lists all the radios your computer can access. The MAC ID number is essentially the serial number of the radio; this number is also printed on the side of the radio. If a radio listing does not appear in the window, select Scan from the File menu. If you still do not see a radio listing, see Troubleshooting.

Tip: If a radio listing does not appear in the window, open the File menu and choose Scan. If you still do not see a radio listing, refer to Diagnostics and troubleshooting in the RLXIB User Guide.

6   Assign a Temporary IP Address

You need the IP address to log into the Radio Configuration/Diagnostic Utility and configure the radio settings. If the radio is connected to a network with a DHCP server, the radio may already have an IP address assigned to it.

If a DHCP server is not available, or if you prefer to assign a static IP address, you can enter a temporary IP here. You will use the Radio Configuration / Diagnostic Utility to assign a permanent IP address.

To assign a temporary IP Address

1   In IH Browser, click to select the radio.

Tip: If a radio listing does not appear in the window, open the File menu and choose Scan. If you still do not see a radio listing, refer to Diagnostics and troubleshooting in the RLXIB User Guide.

2   Open the Operations menu, and choose Assign IP. This action opens the Assign Temporary IP Address dialog box.
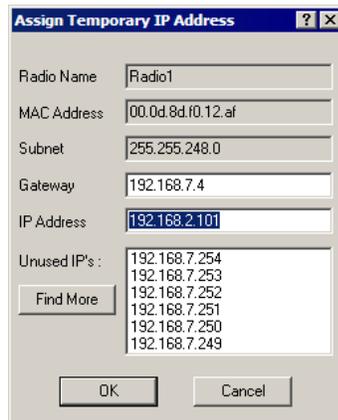
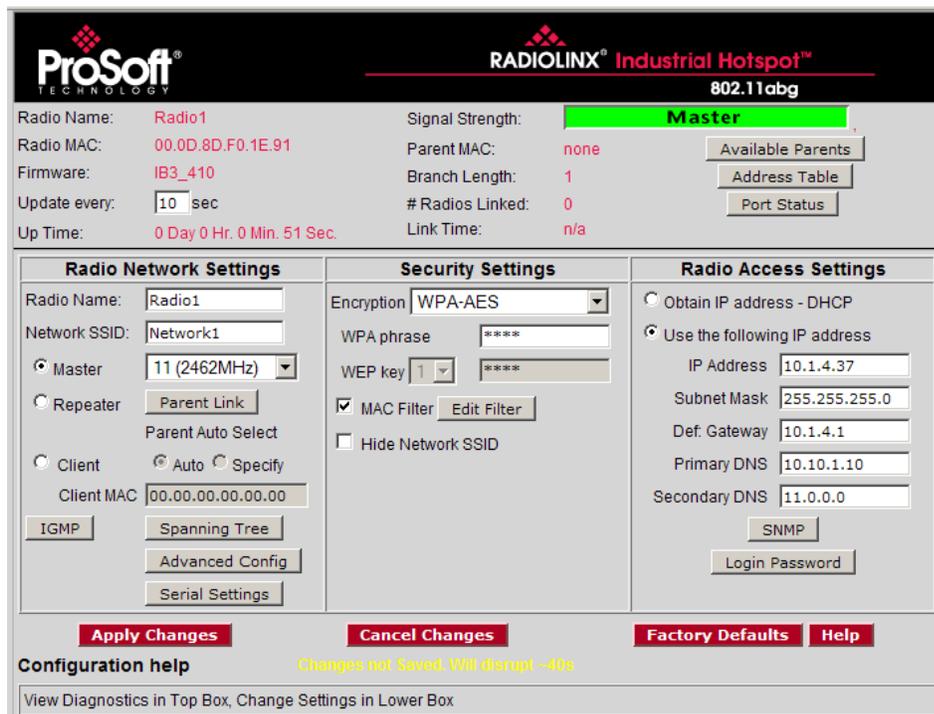**3**   Accept the dynamically assigned address, and then click OK.

For information, see Radio Access settings.

7   Set Up the Master Radio

To configure the radio, double click on the radio (Radio1) in the IH Browser
window. This action opens a web browser (for example Microsoft Internet
Explorer or Firefox) and loads the IH Radio's web configuration interface.

Important: The radio configuration is protected by a login password. The default password for the
radio is "password" (lower case, no quotes). To prevent unauthorized access to the radio
configuration, you should change the password when you have finished the initial configuration.
Note: The master is the "root" or top-level radio in a network. You must have at least one master
radio per network. For redundancy, you can assign more than one master to a network.

To configure a Master radio, make the following changes to the web
configuration form:

Radio Network Settings

- **Radio Name:** Enter a unique name for the radio.
- Select **Master** as the radio mode.
- **Network SSID:** Assign a network name (SSID) of up to 32 characters. The radio uses this name in all network references. All radios in a network must have the same SSID.
- **Channel:** Select a channel and frequency range for the network or accept the default value. Network channels allow radios to avoid sharing a frequency with other networks in the same location. The channel list indicates the channel number as well as the frequency (2.4 gHz or 5 gHz).

Important: The RLXIB-IHW-66 radio is supplied with a dual-band antenna that supports both frequency ranges. If you use a different antenna with the IHW radio, you must choose a channel and frequency range supported by the antenna.

Security Settings

- **Encryption Type:** Encryption scrambles data so that only intended viewers can decipher and understand it. Although "none" is an available encryption type, ProSoft Technology strongly recommends encrypting all data sent and received from every radio on your network, to help prevent your data from being intercepted and decoded.
- **WPA phrase:** To use WPA encryption on packets sent between the radios, select WPA in the Encryption Type field. Next, in the WPA phrase field, enter a pass phrase of between eight and 63 normal keyboard characters. This phrase automatically generates an encryption key of 128 hexadecimal characters. The default pass phrase is "passphrase" (lower case, no quotes). For more information on encryption, see Security settings.
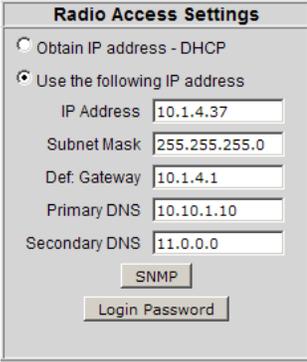
Because you must assign the same Network SSID and WPA phrase to the repeater radios later in this procedure, you should write down the settings.

Note: Network SSID and WPA phrase are both case-sensitive.

Network SSID:_____

WPA phrase:_____

Radio Access Settings

If a DHCP (Dynamic Host Control Protocol) server is configured on your local area network, the DHCP server can assign IP addresses automatically.

If you prefer to assign a Static (Fixed) IP address, select "Use the following IP address", and then enter the IP Address, Subnet Mask and Default Gateway in the Radio Access Settings area of the IH Radio web configuration form.

Important: If you intend to assign IP addresses manually, you must not duplicate an IP address that is already in use on your network. If you are not sure what IP addresses are available, ask your network administrator for assistance.

8   Save the Radio Configuration

Before closing the Radio Configuration window, you must apply your changes.
Click Apply Changes to save your configuration and restart the radio.

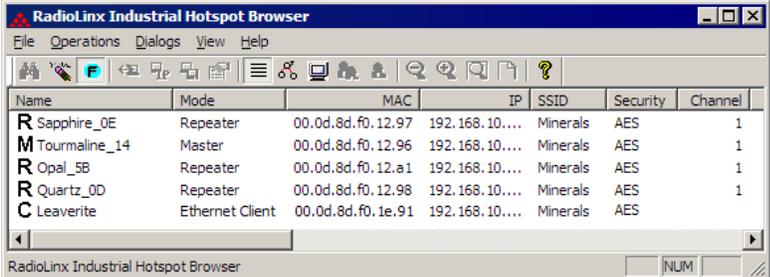Note: To discard your changes and start over, click Cancel Changes.

9   Adding and Configuring Additional Radios

At this point you should attach and configure any additional IHW-66 radios you will be using. Ensure that any new radios use a unique name, but the same Network SSID as your master. The only difference in procedure will be in setting up each additional radio. Instead of setting your additional radios as Masters, they should be set as Repeaters or, more rarely, Clients, depending on their intended purpose.

10   Verify Communication

When configured, the name of each radio is preceded by an M (for Master), an R (for Repeater), or a C (for Client) in the IH Browser window.

Look at the LEDs to ensure good link quality, as explained in LED display. After a repeater is configured, you can unplug the Ethernet cable from it.

11   If You Encounter Problems

11.1   Check the Ethernet cable

If you connect a radio and the Ethernet LED does not light on the radio, you may have used the wrong cable type. In other words, you may have used a cross-over cable when you should have used a straight-through cable, or vice versa.

Use a straight-through cable when connecting the radio to an Ethernet hub or a 10/100 Base-T Ethernet switch. Straight-through cables are used in most cases.

Use a cross-over cable when connecting the Ethernet radio directly to any device that is NOT a switch or a hub (e.g., a direct connection to a PC, PLC, or printer).

11.2   LED display

The RLXIB-IHW-66 front panel includes a set of LEDs that indicate the radio's status:

LED	Description
Power/Status	This green LED indicates that the radio has power.
RF Transmit	This yellow LED indicates RF transmission.
RF Receive	This green LED indicates RF reception.
Ethernet	If this green LED is lit, the Ethernet cable is connected. If this LED is flashing, an Ethernet packet is being transmitted or received.
Signal Strength	If only one of these three LEDs is lit, then the radio is linked. If two LEDs are lit, the radio's signal strength is fair. If all three LEDs are lit, the signal strength is good.

If a radio is configured as a master, the middle light of the three Signal Strength LEDs will always be on, and the bottom Signal Strength LED will always be off. The top LED on the master will flash if any radios are linked to this master.

After you first plug in the power cable and Ethernet cable to the radio, the Power/Status LED should be green, meaning that the radio has power. If the Ethernet LED is green, then the Ethernet connection is working. The RF Transmit and RF Receive LEDs should blink.

All three LEDs will blink just after the radio links to the Master's signal but before it has been fully authenticated. Normally you will see this last only a few seconds. If it lasts longer or never turns solid it usually means the encryption keys are not correct.

11.3   Retrieve the default password

If you forget your password, you will be unable to retrieve your password to change the radio settings. You can reset the default password to use the software again, but you will lose all the settings you programmed before. To reset the default password and return the radio to its default settings, follow these steps:

1   Hold down the reset switch by pressing down on the diamond shape above the word RADIOLINX and apply power to the radio. Continue holding down the reset switch for approximately 10 seconds until the radio initializes.
2   The radio will be reset to its default settings, including the password. You should now be able to log in using the default password, which is "password".

11.3.1 Encryption Keys

The radio ships preset using WPA-AES security. If you need to change the security settings, refer to the IH Browser help file.

The default WPA-AES Phrase when a module ships is "passphrase".

11.4   Starting Over

If necessary, you can always restore the default settings that your radio was shipped with by opening the Radio Configuration/Diagnostic Utility, logging into the radio, and clicking on the Factory Defaults button. **This will remove all changes you have made to the radio configuration, including addressing, naming, and security settings.**