HME# 400G620
Rev B 6/12/09

DX121

One-to-One Wireless Intercom System

Operating Instructions

HM ELECTRONICS, INC.
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Table of Contents

Illustrations in this publication are approximate representations of the actual equipment, and may not be exactly as the equipment appears.

HM Electronics, Inc. is not responsible for equipment malfunctions due to erroneous translation of its publications from their original English version.

FCC NOTICE

This device complies with Part 15 of the FCC rules. 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 undesired operation.

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 communication. 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.

Changes or modifications not expressly approved by HM Electronics, Inc. could void the users authority to operate this equipment.

MANDATORY SAFETY INSTRUCTIONS FOR INSTALLERS AND USERS

Use only manufacturer or dealer supplied antennas.

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy, which is below the OSHA (Occupational Safety and Health Act) limits.

The term "IC:" before the certification/registration number only signifies that the Industry Canada technical specifications were met.

Base Station Antenna minimum safe distance: 7.9 inches (20 cm) at 100% duty cycle.

Base Station Antenna gain: This device has been designed to operate with an antenna having a maximum gain of up to 2dBi.

Antenna mounting: The antenna(s) used for the base transmitter must be installed to provide a separation distance of at least 7.9 inches (20 cm) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

Antenna substitution: Do not substitute any antenna for the one supplied by the manufacturer or radio dealer. You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.

WARNING: Maintain a separation distance from the Base Station transmit antenna to a person(s) of at least 7.9 inches (20 cm) at 100% duty cycle.

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use. Transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna.

Hereby, HM Electronics, Inc. declares that the DX121 is in compliance with the essential requirements and other relevant provisions of R&TTE Directive 1999/5/EC.

CE

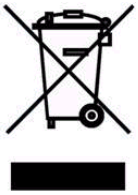
This product operates in the 2400 to 2483.5 MHz frequency range. The use of this frequency range is not yet harmonized between all countries. Some countries may restrict the use of a portion of this band or impose other restriction relating to power level or use. You should contact your Spectrum authority to determine possible restrictions.

Waste Electrical and Electronic Equipment (WEEE)

The European Union (EU) WEEE Directive (2002/96/EC) places an obligation on producers (manufacturers, distributors and/or retailers) to take-back electronic products at the end of their useful life. The WEEE Directive covers most HME products being sold into the EU as of August 13, 2005. Manufacturers, distributors and retailers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

The symbol shown below is on the product or on its packaging which indicates that this product was put on the market after August 13, 2005 and must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of the user's waste equipment by handing it over to a designated collection point for the recycling of WEEE. The separate collection and recycling of waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local authority, your household waste disposal service or the seller from whom you purchased the product.



DX121 Quick Reference Guide

Base Station

Power	● Connect power — See page 9 ● Press POWER button to turn base station on/off — Red light above button indicates power on ● Green BATT PWR light indicates base station is operating on battery power
Communicator Registration	● Insert charged battery in Communicator ● Press REG button on the base station to enter registration mode — See page 13 ● Hold down ISO button while you press and release POWER button on the Communicator
IC/ISO Indicators	● Green lights indicate IC or ISO communication is being received
Headset/4-Wire Audio Level	● Adjust INbound/OUTbound headset and 4-Wire equipment audio levels using small screwdriver
Battery Charger	● Place battery in port for charging ● Red CHG light indicates battery is charging ● Green RDY light indicates fully-charged battery is ready

Beltpac COMMUNICATOR®

- PWR Power on/off
- ▲ Volume up
- ▼ Volume down
- IC Intercom
- ISO Isolate

	Hands Free (HF)	Push-To-Talk (PTT)	ISO Lockout
Mode Setup	● Power OFF ● Press/hold ▲ and ISO while you press/release PWR ● Release ▲ and ISO	● Power OFF ● Press/hold ▼ and ISO while you press/release PWR ● Release ▼ and ISO	● Power OFF ● Press/hold IC while you press/release PWR To reset ISO — ● press/hold ISO and IC while you press/release PWR
Operation	● Press and release IC or ISO quickly to latch into mode to talk to other Communicators ● Press/release again to unlatch and listen	● Press and hold IC or ISO while talking to other Communicators ● Release to listen	● Use either IC or ISO to talk to other Communicators in HF or PTT ● ISO will not operate relay
Change Battery	If you hear "Change battery" — ● Remove beltpac from pouch ● Remove battery from beltpac ● Place battery in battery-charger port for recharging ● Install fully charged battery in beltpac		 Battery release latch

For detailed information on DX121 features, and for setup and operating instructions, continue reading the following pages.

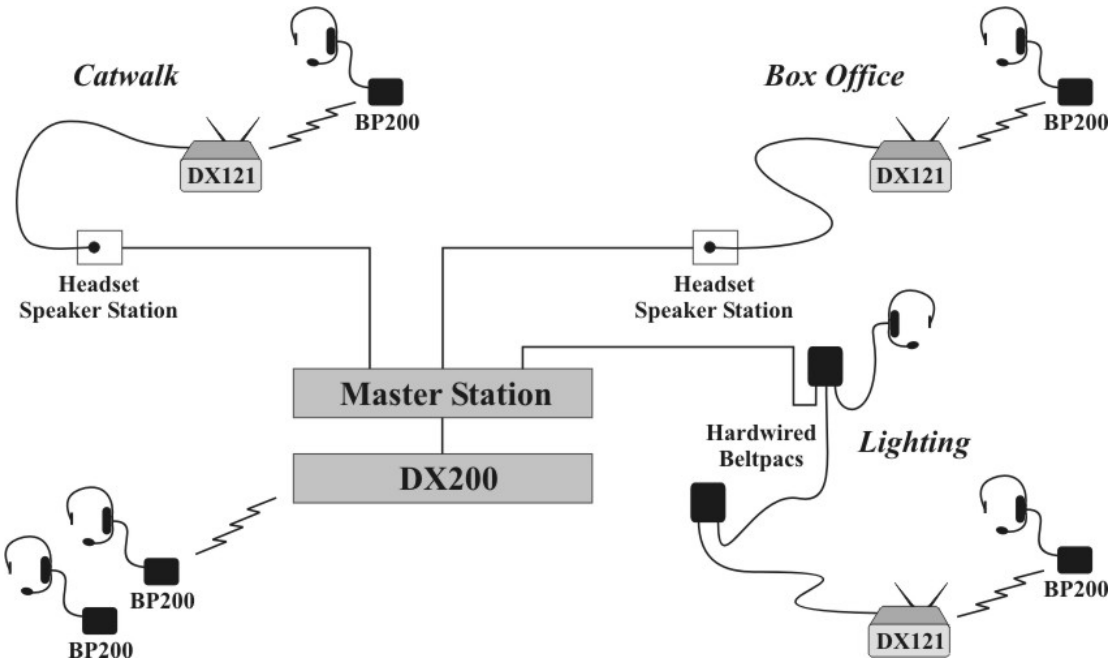
SECTION 1. INTRODUCTION

The DX121 is a 2.4 GHz Wireless Intercom System. The Base Station will connect to a dynamic microphone headset jack or a 4-Wire connector of a hardwired intercom station, and also provides battery-charging capability for one battery. The system typically uses BP200 Beltpacs, but can also be used with the WH200 All-in-One Headset and/or WS200 Wireless Speaker Station COMMUNICATOR®s. Once connected to your system, you can leave your console or intercom station while using a Communicator.

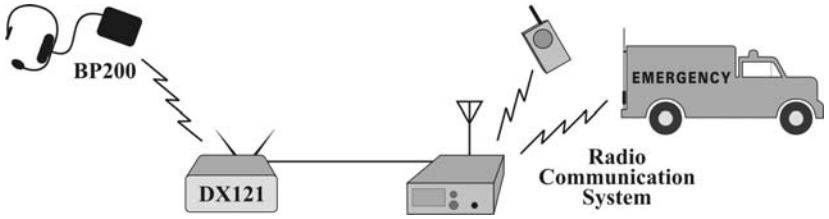
- Each Base Station supports one Communicator in full duplex, hands-free operation.
- Each Base Station supports up to four registered Communicators.
- Compatible with RTS and ClearCom/Production Intercom wired intercom headset or 4-Wire capable equipment. **NOTE:** Use only with headset connectors capable of supporting dynamic microphone headsets.
- In the default mode, the ISO button activates relay-controlled contacts. For alternate operating mode, see Relay Operation, page 22.
- The IC button activates audio to the 4-Wire and headset Input/Output connector(s).
- The ISO and IC buttons activate audio to other registered Communicators.
- The Base Station can charge a BAT41 battery in less than 3 hours.
- In case of power outage, the Base Station will operate temporarily from a battery in the charging port, for approximately 30 minutes.

TYPICAL DX121 APPLICATIONS

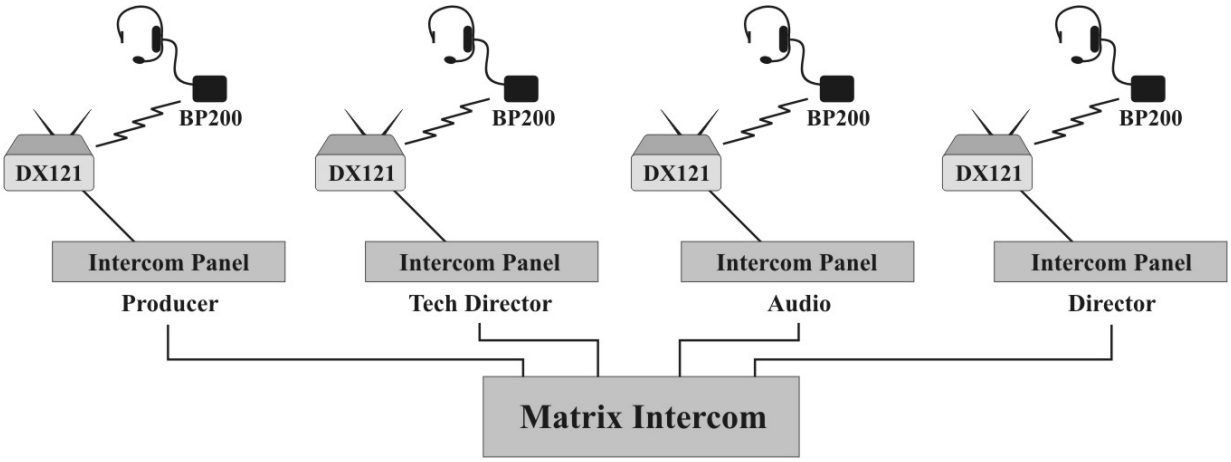
Large Venue



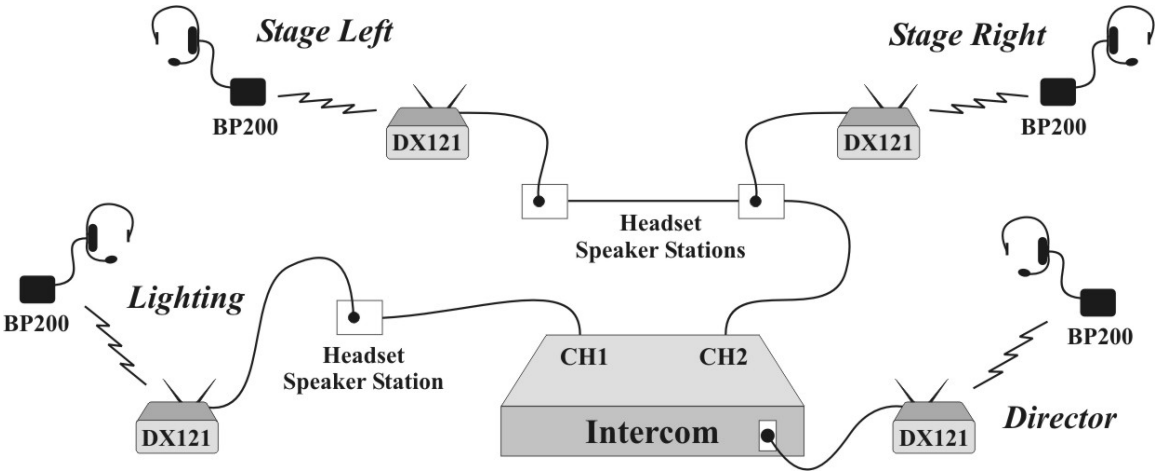
Radio Communication Center



Broadcasting



Theatre



EQUIPMENT IDENTIFICATION

The DX121 One-to-One Wireless Intercom System includes a base station and may include any combination of COMMUNICATOR®s. Other optional equipment may also be used with your system.
As you unpack the equipment, check the enclosed shipping document to be sure you received all items listed.

Base Station

BS121 Base Station

Base Station Antennas
(2 per Base Station)

115/230 Volt AC Power Supply
(1 per Base Station, with Power Cord)

Communicators

HS15 Headset

BP200 Beltpac

Beltpac Pouch

Battery
2 per Beltpac or
All-in-One Headset

WH200 All-in-One
Wireless Headset

WS200
Wireless Speaker Station

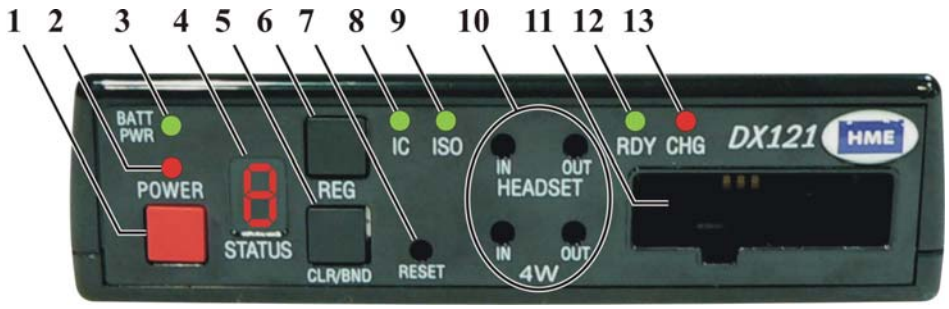
115/230 VAC Power Supply
with Power Cord for WS200

WS200 Battery Sled

OPTIONAL EQUIPMENT	
BP200 Beltpac	**WH200** All-in-One Headset
HS15 Single-Muff Headset	**BAT41** Rechargeable Battery
HS15D Dual-Muff Headset	**WS200** Wireless Speaker Station
HS16 Lightweight Headset	**BAT850** Rechargeable Battery for WS200
HS4-3 Earpiece & Lapel Microphone	**AC850** Battery Charger for WS200
HSI6000 Headset Adapter	

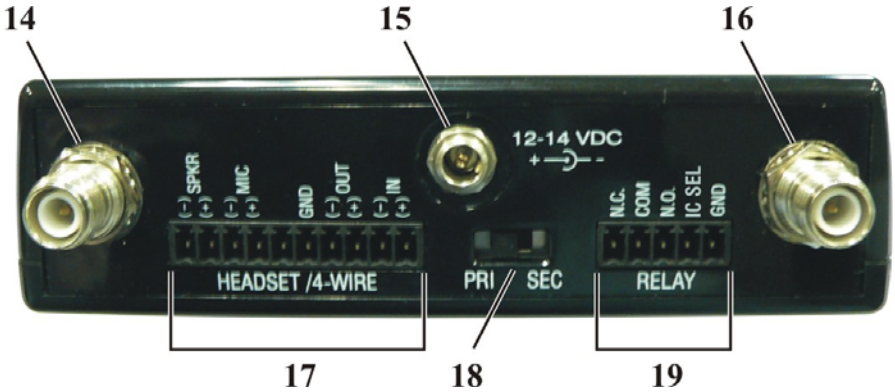
MAIN EQUIPMENT FEATURES

Base Station Features



Front Panel

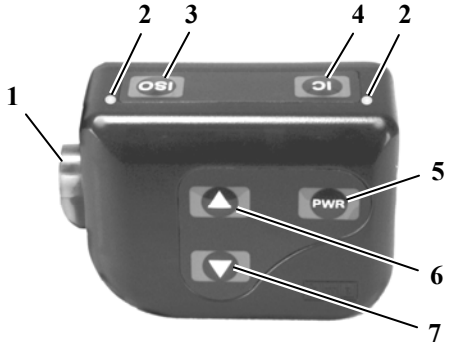
1. **POWER** button
2. **POWER** light
3. **BATT PWR** (battery power) light
4. **STATUS** display
5. **CLR/BND** (clear/band) button
6. **REG** (registration) button
7. **RESET** button (recessed)
8. **IC** indicator light
9. **ISO** indicator light
10. **HEADSET** and **4W** (4-Wire) **IN** and **OUT** audio level controls
11. Battery charger port
12. **RDY** (battery ready) light
13. **CHG** (battery charging) light



Rear Panel

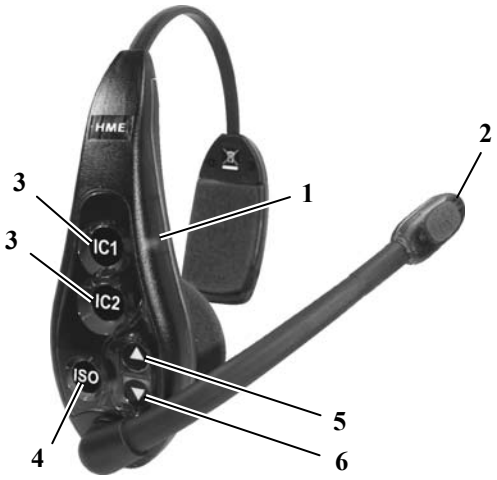
14. Antenna connector
15. **12-14 VDC** power supply connector
16. Antenna connector
17. **HEADSET / 4-WIRE** connector block
18. **PRI SEC** (primary/secondary) switch
19. **RELAY** connector block

Beltpac Features



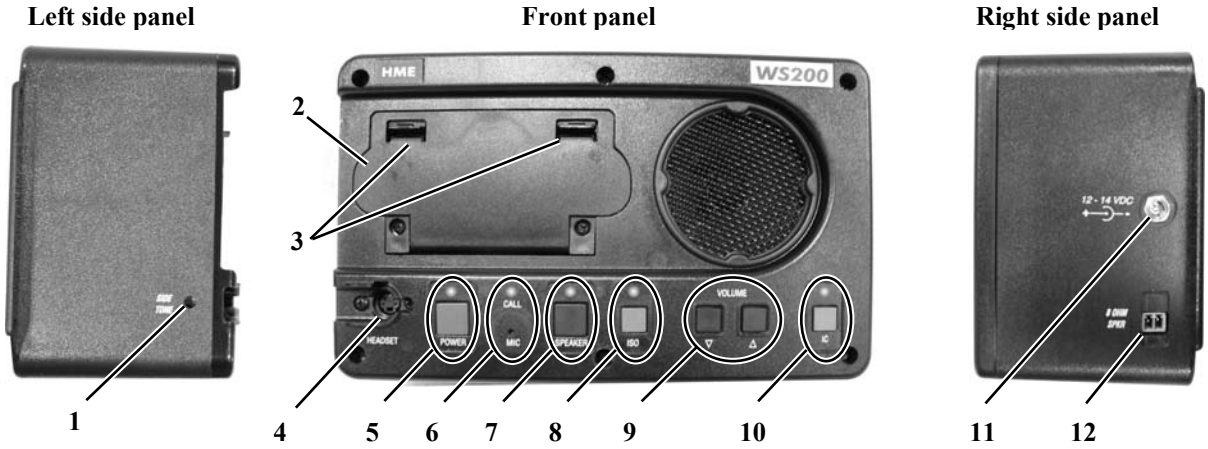
1. Headset cable connector
2. Beltpac power and transmit lights
3. **ISO** (Isolate) button
4. **IC** (Intercom) button
5. **PWR** (Power) button
6. Volume-up ▲ button
7. Volume-down ▼ button
8. Battery
9. Battery release latch

All-in-One Headset Features



1. Power light
2. Transmit light
3. **IC1** & **IC2** (Intercom) buttons
4. **ISO** (Isolate) button
5. Volume-up ▲ button
6. Volume-down ▼ button
7. Power button
8. Battery release latch
9. Battery

Speaker Station Features



1. **SIDE TONE** adjustment (recessed)
2. Battery compartment cover
3. Battery compartment cover release latches
4. **HEADSET** connector
5. **POWER** button and light
6. **CALL** light and **MIC** (microphone)
7. **SPEAKER** button and light
8. **ISO** (Isolate) button and light
9. **VOLUME** down ▼ and up ▲ buttons
10. **IC** (Intercom) button and light
11. **12-14VDC** power adapter cable connector
12. **8 OHM SPKR** external speaker connector

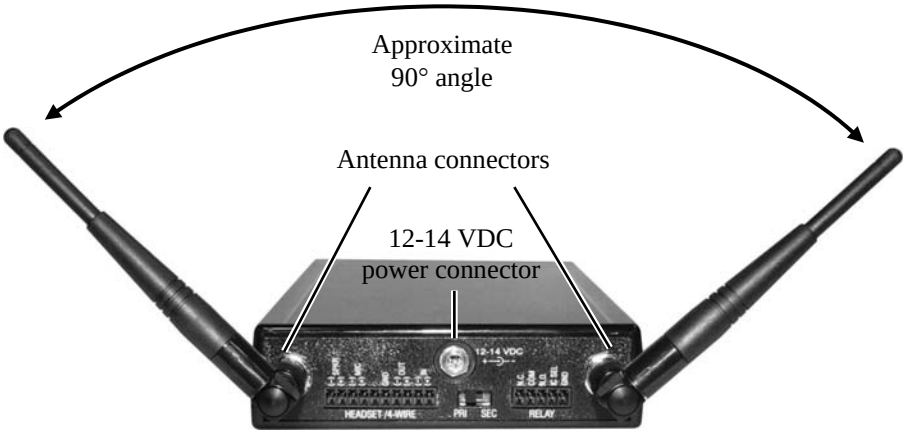
SECTION 2. EQUIPMENT SETUP

BASE STATION SETUP

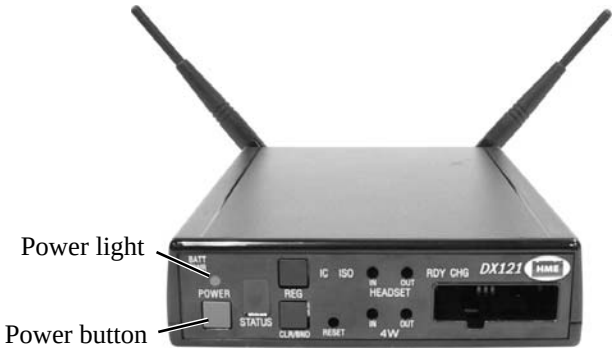
Basic Base Station Setup

The following description is for a basic, stand-alone DX121 One-to-One Wireless Intercom System setup. Intercom headset, 4-Wire intercom and relay connections are described on page 22.

Set up the Base Station as follows:



Rear Panel



Front Panel

Step 1. Mount antennas -

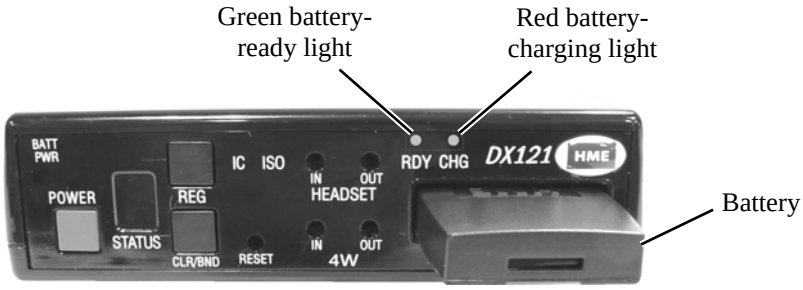
Mount the two enclosed antennas on the antenna connectors on the rear panel of the Base Station. Position the antennas at an approximate ***90°*** angle. Turn the sleeve on each of the antenna connectors clockwise to tighten it securely in place.

Step 2. Connect power -

- Plug the connector at the end of the AC power supply cord into the **12-14VDC** power connector on the rear panel of the Base Station, and turn the nut on the connector clockwise to secure it to the Base Station.
- Plug the female connector at one end of the power cord into the AC power supply, and plug the other end into an electrical outlet.
- Press the **POWER** button on the front of the Base Station to turn it on. The red light above the button should go on.

Step 3. Charge batteries -

IMPORTANT! – Before using the DX121 system, charge the batteries for the Beltpacs and/or WH200 Headsets. Charging time for fully-discharged batteries is about 3 hours per battery.



- One battery can be charged in the battery charger at a time.
- Insert a battery in the charging port until it clicks in place.
- A red charging **CHG** light above the battery port stays on while a battery in the port is charging.
- A green ready **RDY** light above the battery port goes on when a battery in the port is fully charged.

Interference Avoidance

Interference, which may be heard in a headset as popping sounds, may occur whenever other equipment such as WI-FI systems, wireless DMX systems, other HME Base Stations, etc. use the same frequency band. If these systems can be limited to one portion of the band, then the DX121 can be set to the opposite half of the 2.4 GHz to 2.48 GHz band. To avoid this type of interference, set up the base stations for "split-band" operation by selecting the upper part of the frequency range on one Base Station (or more), and the lower part of the frequency range on the other(s) as follows:

- Turn on the Base Station power. An "**8**" will appear on the **STATUS** display for a few seconds.
- After the "**8**" disappears and the **STATUS** display is blank, press and hold the **CLR/BND** button and then, while you are still holding the **CLR/BND** button, press and hold the **REG** button and wait until a **L**, **H** or **A** appears, and then release both buttons.
- Press the **CLR/BND** button to cycle through parts of the frequency band; **L** = Low end, **H** = High end and **A** = All. Stop on the band that you want to select.

- Wait until "**c**" appears on the display.

NOTE: Base stations are shipped in the **A** (default) position.

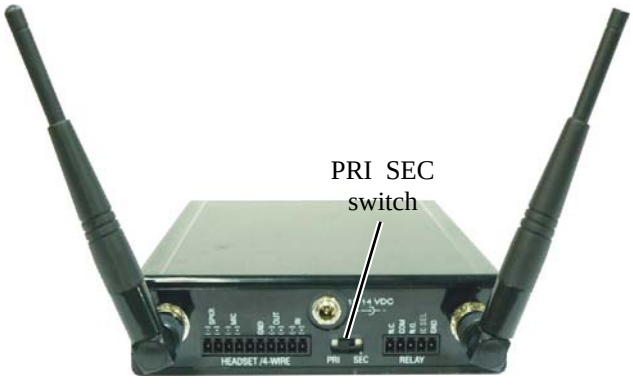
Multiple Base Station Setup

This mode of operation can be used to expand the number of users communicating through multiple HME Base Stations operating in the same portion of the 2.4 GHz to 2.48 GHz frequency band.

Primary and Secondary Base Station Settings

One Base Station must be designated as "Primary" while the others are designated as "Secondary". You can have only one primary and up to 3 secondary Base Stations. Secondary Base Stations are assigned numbers 1, 2, or 3.

- Label the Base Stations as "Primary," "1," "2" and "3."
- Start with every Base Station and COMMUNICATOR® power off.
- Locate the **PRI SEC** switch on the rear panel of the Base Station.
- Set the **PRI SEC** switch to the **PRI** position on the primary Base Station.
- Set the **PRI SEC** switch to the **SEC** position on each secondary Base Station.
- If a Base Station has been set for interference avoidance, it should be used as the primary Base Station. The secondary Base Stations will automatically be set to the same band when they are initialized.



Rear panel of Base Station

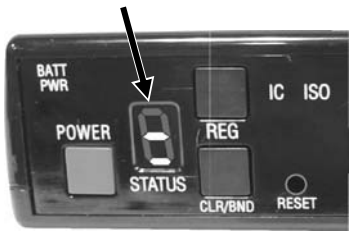
Base Station Initialization

For multiple HME Base Stations to operate without interference, they must be properly initialized before performing any other setups. After initializing each Base Station, register each COMMUNICATOR® that will be used with that base according to the procedures on pages 13 – 20.

NOTE: Base stations must be set up for split-band operation prior to initialization. (See Interference Avoidance on page 10.)

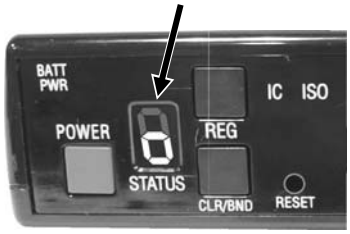
- Turn the primary Base Station power on. Register any Communicators to be used with the primary Base Station (See pages 13 – 20). Turn each Communicator off after registering it.
- Power on one **secondary** Base Station. The **STATUS** display will show a double bar, indicating the secondary base is ready to be initialized.

Double bar



Base Station ready to be initialized

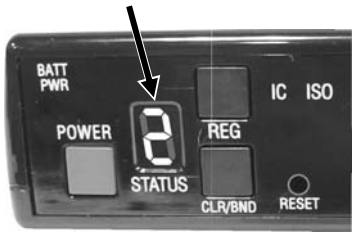
Small “o”



Small "o" indicates primary base is open for registration

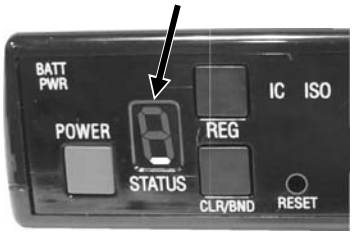
- Press the **REG** button on the primary base. The **STATUS** display will show a small “o.”
- To assign a number to a secondary Base Station and initialize it, press the **REG** button on the secondary base. Pressing the button repeatedly causes it to cycle through the numbers **1**, **2**, and **3**. When the desired number appears, stop pressing and wait. While the secondary base initializes using the displayed number, the **STATUS** display will continue showing the secondary number selected. When initialization of the secondary Base Station is finished, the display will show one bar, to indicate the secondary has initialized to the primary.

Secondary base number



Secondary 2 searching for primary

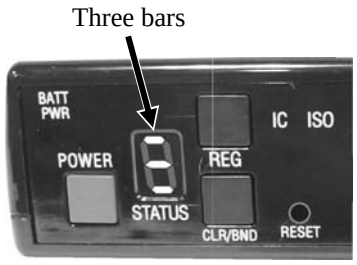
One bar



Secondary is initialized to primary

- Press the **REG** button on the primary. The **STATUS** display will go blank.
- Register Communicators to the secondary (See pages 13 – 20). After registration, turn off the secondary base and all Communicators.

- Repeat these steps for each remaining secondary base. Use a different number for each. Only the primary base and the secondary base you are working with should have power on during initialization. All other equipment should be off.
- After all secondary bases are initialized and COMMUNICATOR®s are registered power up all bases. Press **RESET** on the primary base and let it recover. Turn on the primary Communicators and let them link. Press **RESET** on each secondary base one at a time and let it initialize to the primary, as indicated by a single bar. Turn on the Communicators associated with the secondary bases. Do one group at a time until they have all linked. Then do the next group. At this point all bases and Communicators should be powered up and linked, ready for use.
- Now proceed with normal system configuration, setting functions and levels as required.
- If it becomes necessary to replace a secondary base, use the procedure above to initialize the new secondary with the same number as the old secondary. After initialization you will have to register any Beltpacs/Headsets associated with the old secondary to the new secondary.
- If it becomes necessary to replace a primary base, follow the above procedure completely. Before initialization of the secondary bases, clear the previous secondary initialization as follows. For each secondary, press the **CLR/BND** button and the **RESET** button at the same time. Continue holding the **CLR/BND** button after you release the **RESET** button, until the clear code "**c**" (lower case) appears on the **STATUS** display. Any Communicators associated with the old primary will have to be registered to the new primary after secondary base initialization. All Communicators associated with secondary Base Stations also have to be registered again.
- If the primary base is shut down or if the primary base is powered off for more than 30 seconds, all secondary bases will drop their Communicator connections and begin searching for the primary. If the primary is not found in 30 seconds, the secondary will automatically revert to primary-mode operation and reconnect the Communicators. At this point the secondary **STATUS** displays will show three bars. If the primary is turned back on it will be necessary to press **RESET** on all secondary bases to allow them to find and initialize to the primary again. It is therefore important to have all bases connected to the same AC circuit to prevent this situation when the system is shut down after hours and powered up again the next day.



Secondary base operating in primary mode when no primary base is found

NOTE: You cannot register Communicators to a base that is set to primary mode, and then switch the base mode to secondary for initialization. Once in secondary mode, the base cannot recognize the Communicators registered during primary operation. For secondary bases, the Communicators must always be registered after secondary base initialization, with the primary base remaining active and the secondary base displaying one bar.

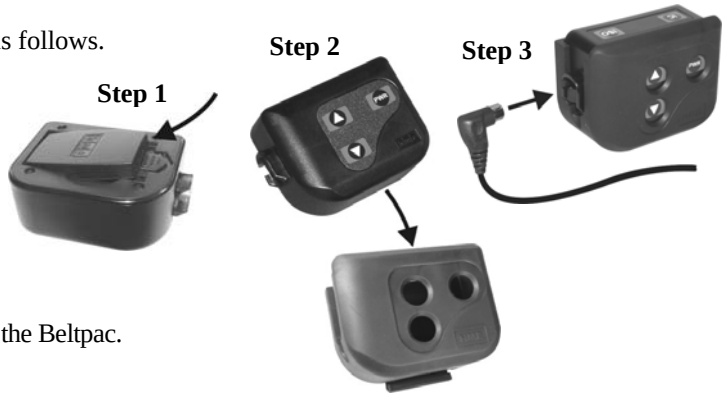
BELTPAC / ALL-IN-ONE HEADSET / SPEAKER STATION SETUP AND REGISTRATION

The first time you operate the DX121 system, you must register each BP200 Beltpac, WH200 All-In-One Headset and/or WS200 Speaker Station COMMUNICATOR® for use with a specific Base Station. The Base Station will then recognize all registered Communicators when their power is on, and will know the difference between them and other electronic equipment operating on the same frequencies. If a Communicator is added, replaced or repaired later, the new one must be registered and the old one remains in memory. A maximum of 4 Communicators can be registered to a single Base Station at one time. If the maximum number of 4 is exceeded, you must clear all current registrations and re-register all active Communicators.

NOTE: The following two pages are for Beltpac setup and registration. All-In-One Headset setup and registration instructions are on pages 15 and 16. Instructions for Speaker Station setup and registration are on pages 17 - 20.

Set Up Beltpacs

Before registering them, set up all Beltpacs as follows.



Step 1. Insert a fully charged battery in the Beltpac, with the metal contacts on the end of the battery inserted first. Press it in until it snaps.

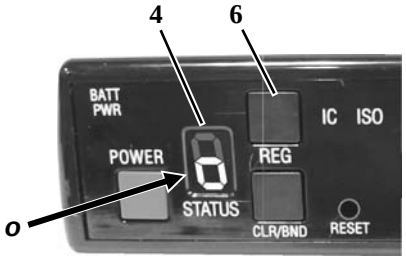
Step 2. Place the Beltpac in the pouch.

Step 3. Plug the headset cable connector into the Beltpac.

Register Beltpacs

Beltpacs must be within 6 feet (1.83 meters) of the Base Station while you are registering them. Be certain the Base Station power is on, and each Beltpac you are going to register is turned off before you begin. Beltpacs that are already registered can be on or off.

NOTE: If you are setting up multiple Base Stations, the following steps must be repeated for Beltpacs being registered to each Base Station.



Step 1. Put the headset, of the Beltpac being registered, on your head.

Step 2. Press the **REG** button on the front panel of the Base Station (#**6** on Base Station front panel illustration).

- The **STATUS** display (#**4** on Base Station front panel illustration) will show a small "**o**" for open.

  NOTE: If you wait too long before going on to Step 3, the Base Station will go out of the registration mode and you will have to repeat Step 2.

Step 3. Press and hold the **ISO** button on the Beltpac while you press and release the **PWR** (power) button to turn the unit on, then release the **ISO** button. This will cause the Beltpac to enter the registration mode.

- The two power lights at the corners of the Beltpac near the **IC** and **ISO** buttons will begin blinking red, then will blink green two or three times and go off.
- ***Wait!*** There may be a short delay.

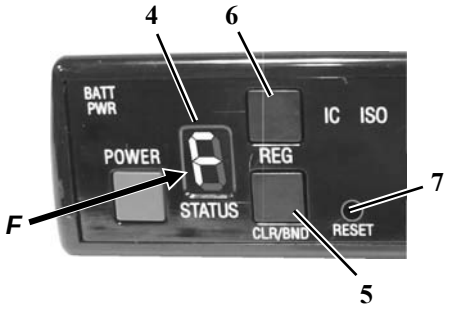
If registration is successfully completed:

- A voice message in the headset will say "Power on, Beltpac #, Version #, Begin registration, Registration complete, …"
- After a delay of up to 15 seconds, the **STATUS** display will show the ID number assigned to this Beltpac for about 10 seconds.

  NOTE: ID numbers are assigned sequentially as 0 thru 3.
- The power light on the Beltpac, next to the **IC** button, will remain on steady green.
- **Repeat Steps 1 to 3 at the bottom of page 13 for each Beltpac to be registered.**

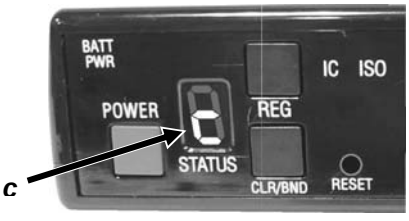
If registration failed:

- A voice message in the headset will say "Power on, Beltpac #, Version #, Begin registration, …" Both power lights on the Beltpac will be blinking red, and there may be a delay of up to 90 seconds before you hear "Registration failed" and the **STATUS** display (#**4**) goes blank.
- Press **RESET** (#**7**) on the Base Station. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. When the **STATUS** display (#**4**) becomes blank, press the **REG** button (#**6**) and register the Beltpac again. If registration fails again, call your dealer for assistance.



If you try to register more than 4 COMMUNICATOR®s to a Base Station:

- An "**F**" (for registration "Full") will appear on the **STATUS** display (#**4**) on the Base Station and you will hear "Registration failed" in the Headset.
- Clear all current registrations by pressing the **CLR/BND** button (#**5**) and **RESET** (#**7**) at the same time. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. Continue holding the **CLR/BND** button after you release **RESET**, until the clear code "**c**" (lower case) appears on the **STATUS** display.



- Register all active Beltpacs, one at a time.

Set Up All-In-One Headsets

Before registering them, insert a fully charged battery in each Headset, with the metal contacts on the end of the battery inserted first. Press it in until it snaps.

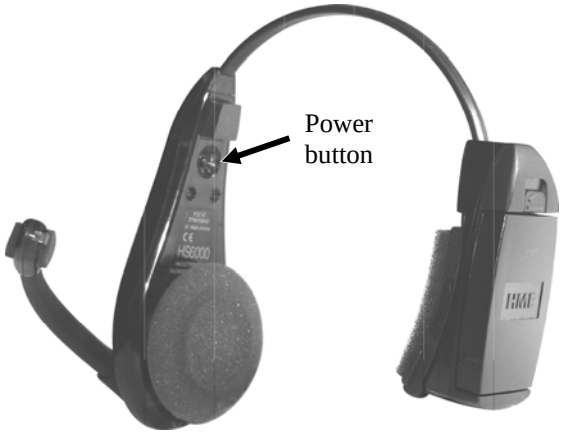
Power On/Off

- **To turn power on**

  Press and release the power button on the inside of the Headset housing. A voice message in the earpiece will say "Headset #" and the power light on the opposite side of the earpiece will go on.

- **To turn power off**

  Press and hold the power button for approximately 3 seconds. A voice message in the earpiece will say "Headset off," and the power light on the opposite side of the earpiece will go off.



Register All-In-One Headsets

Headsets must be within 6 feet (1.83 meters) of the Base Station while you are registering them. Be certain the Base Station power is on, and each Headset you are going to register is turned off before you begin. Headsets that are already registered can be on or off.

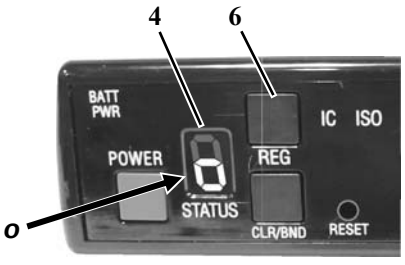
NOTE: If you are setting up multiple Base Stations, the following steps must be repeated for Headsets being registered to each Base Station.

Step 1. Put the Headset on your head.

Step 2. Press the **REG** button on the front panel of the Base Station (#**6** on Base Station front panel illustration).

- The **STATUS** display (#**4** on Base Station front panel illustration) will show a small "o" for open.

  NOTE: If you wait too long before going on to Step 3, the Base Station will go out of the registration mode and you will have to repeat Step 2.



Step 3. Press and hold the **ISO** button on the Headset while you press and release the power button to turn the unit on, then release the **ISO** button. This will cause the Headset to enter the registration mode.

- The Headset power light will begin blinking red, then will blink green two or three times and go off.

  Wait! There may be a short delay.

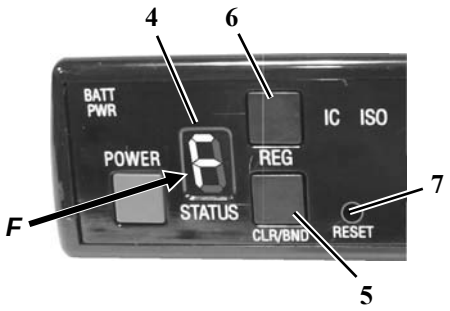
If the registration is successfully completed:

- A voice message in the Headset will say "Power on, Headset #, Version #, Begin registration, Registration complete, …"
- After a delay of up to 15 seconds, the **STATUS** display will show the ID number assigned to this Headset for about 10 seconds.

  NOTE: ID numbers are assigned sequentially as 0 thru 3.
- The power light on the Headset will remain on steady green.
- **Repeat Steps 1 to 3 at the bottom of page 15 for each Headset to be registered.**

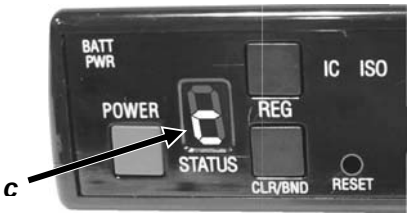
If registration failed:

- A voice message in the Headset will say "Power on, Headset #, Version #, Begin registration, …" The power light on the Headset will be blinking red, and there may be a delay of up to 90 seconds before you hear "Registration failed" and the **STATUS** display (#**4**) goes blank.
- Press **RESET** (#**7**) on the Base Station. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. When the **STATUS** display (#**4**) becomes blank, press the **REG** button (#**6**) and register the Headset again. If registration fails again, call your dealer for assistance.



If you try to register more than 4 COMMUNICATOR®s to a Base Station:

- An "**F**" (for registration "Full") will appear on the **STATUS** display (#**4**) on the Base Station and you will hear "Registration failed" in the Headset.
- Clear all current registrations by pressing the **CLR/BND** button (#**5**) and **RESET** (#**7**) at the same time. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. Continue holding the **CLR/BND** button after you release **RESET**, until the clear code "**c**" (lower case) appears on the **STATUS** display.



- Register all active WH200 Headsets, one at a time.

Set Up Speaker Stations

The Speaker Station can be used together with Beltpacs and All-in-one Headsets. It provides wireless communication through its built-in microphone and speaker, or a plug-in headset. A remote speaker can also be connected to the unit.
The Speaker Station can be used on a table top or mounted on the wall. It can be operated with standard AC power, 12-14VDC or with six AA batteries or an optional rechargeable battery. A power supply with cord and a battery sled are provided. Whether used on a table top or mounted on the wall, if AC operation is required, the Speaker Station must be located close enough to an electrical outlet to be reached with the power supply and cord.

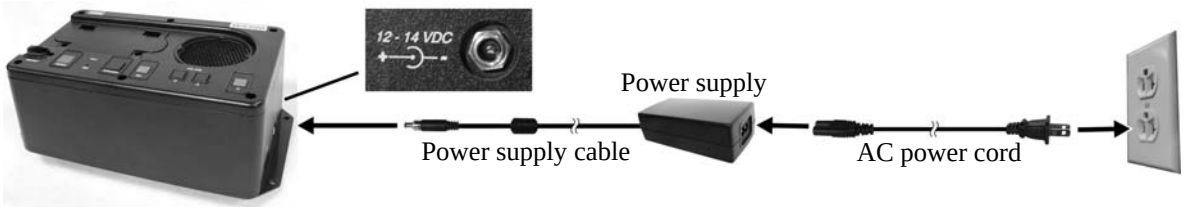
Wall Mounting

- Hold the unit against the wall where you will mount it and mark the wall through the four holes in the flanges on its left and right sides.
- Drill holes in the wall at the four marked spots, and mount the WS200 over the holes with your selected hardware (not provided).

AC Power Operation

If using the WS200 with AC power —

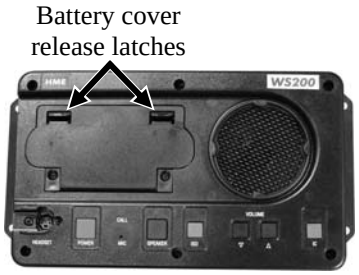
- Plug the connector at the end of the power supply cable into the **12-14 VDC** power connector on right side of the unit. Turn the sleeve on the connector clockwise to secure it to the unit.
- Plug the large female connector at one end of the AC power cord into the power supply. Plug the other end of the AC power cord into an electrical outlet.



Having a fully charged (or new) battery in its battery compartment when operating the WS200 with AC or external DC power can prevent interruption of communication during a power outage. The WS200 will automatically switch to battery power.

Battery Operation

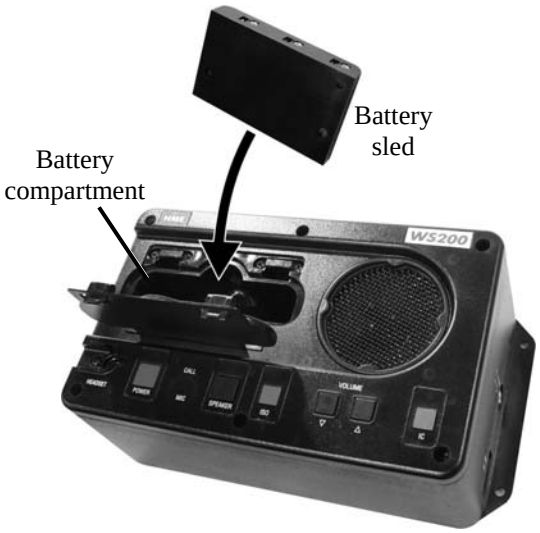
If using the Speaker Station with battery power —



- Press down and pull out on the two battery cover release latches and lift the cover to open the battery compartment.

- Insert six AA batteries into the battery sled, in the positions shown inside the sled, and install the sled in the battery compartment.

Battery sled
with batteries



NOTE: An HME BAT850 Rechargeable NiMH Battery can be used instead.

- Close the battery compartment by pressing down on its cover next to both of the latches at the same time until they snap in place.

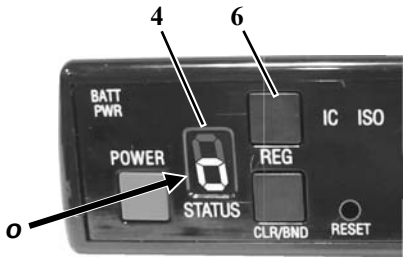
Register Speaker Stations

The first time you operate a Speaker Station, you must register it for use with a specific Base Station. The Base Station will then recognize the Speaker Station when its power is on, and will be able to tell the difference between it and other electronic equipment operating on similar frequencies, or DX family Beltpacs or All-in-one Headsets.

NOTE: The Speaker Station must be within 6 feet (1.83 meters) of the Base Station while being registered.

Registration Procedure:

- Be sure the Speaker Station is turned off and the Base Station power is on.
- On the Base Station, press and release the **REG** button (**#6**).
  — The **STATUS** display (**#4**) will show a small "**o**" for open.



- On the Speaker Station, press and hold the **ISO** button while you press and release the **POWER** button to turn the unit on, and then release the **ISO** button. This will cause the Speaker Station to enter the registration mode.
  — The **STATUS** display on the Base Station will continue to show a small "**o**."
  — The **ISO** and **IC** lights on the Speaker Station will be blinking red then will change to a steady green **IC** light.

If registration is successfully completed:

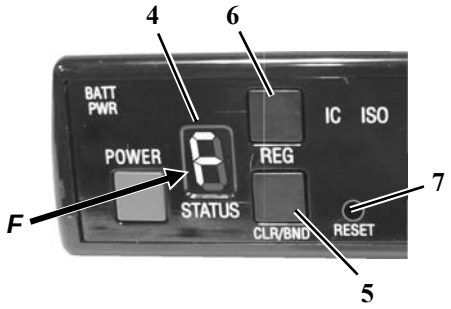
- If you have a headset plugged into the Speaker Station or if the speaker is on, you will hear a voice message in the headset or speaker saying "Power on, Speaker #, Version #, Begin registration, Registration complete…"
- After a delay of up to 15 seconds, the **STATUS** display on the Base Station will show the ID number assigned to the Speaker Station, for about 10 seconds.

NOTE: ID numbers are assigned sequentially to registered COMMUNICATOR®s as 0 thru 3.

- The **IC** light on the Speaker Station will remain on steady green.

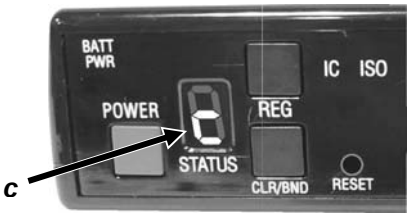
If registration failed:

- A voice message will say "Power on, Speaker, Version #, Begin registration, …"
  The **ISO** and **IC** lights on the Speaker Statio n will be blinking red, and there may be a delay of up to 90 seconds before you hear "Registration failed," and the **STATUS** display (#**4**) goes blank.
- Press **RESET** (#**7**) on the Base Station. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. When the **STATUS** display (#**4**) becomes blank, press the **REG** button (#**6**) on the Base Station and register the Speaker Station again. If registration fails again, call your dealer for assistance.



If you try to register more than 4 COMMUNICATOR®s to a Base Station:

- An "**F**" (for registration "Full") will appear on the Base Station **STATUS** display (#**4**), and you will hear "Registration failed."
- Clear all current registrations by pressing the **CLR/BND** button (#**5**) and **RESET** (#**7**) on the Base Station at the same time. To press **RESET**, insert a small paper clip or similar object into the **RESET** hole at the lower-left corner of the Base Station front panel. Continue holding the **CLR/BND** button after you release **RESET**, until the clear code "**c**" (lower case) appears on the **STATUS** display.



- Register all active Speaker Stations, one at a time.

NOTICE

You have completed the system setup.

The instructions under INTERCOM AND RELAY CONNECTIONS on page 22 are for setting up auxiliary audio equipment which you may want to use with your DX121.

INTERCOM AND RELAY CONNECTIONS

If using your DX121 with a wired intercom system, connect the intercom to the **HEADSET/4-WIRE** connector on the rear panel of the Base Station as shown below. Also, the **RELAY** connector shown below can be used as a "dry contact" for any outside equipment.

Base Station rear panel showing HEADSET/4-WIRE and RELAY connectors

Base Station front panel showing HEADSET and 4W (4-Wire) input and output level adjustments

HEADSET/4-WIRE Connector		
Pin 1	Headset connections	SPKR – Input
Pin 2		SPKR + Input
Pin 3		MIC – Output
Pin 4		MIC + Output
Pin 5		N/C
Pin 6		GND
Pin 7	4-Wire connections	4-WIRE – Output
Pin 8		4-WIRE + Output
Pin 9		4-WIRE – Input
Pin 10		4-WIRE + Input

NOTE: Indicated PinOut connections should be matched to the corresponding PinOut connections of the intercom which will be used.

RELAY Connector	
Pin 1	N.C. (Normally Closed)
Pin 2	COM
Pin 3	N.O. (Normally Open)
Pin 4	IC SEL
Pin 5	GND

Intercom Headset Connection

If using the headset connector of an intercom, connect the wires from a headset connector (not provided) to pins 1 through 4 of the **HEADSET/4-WIRE** connector on the rear panel of the Base Station. Be sure the headset jack of the intercom system is turned on. For intercom headset wiring diagram, see page 34.

4-Wire Intercom Connection

If using a 4-Wire intercom, connect the wires from a 4-Wire connector into the **HEADSET/4-WIRE** connector on the rear panel of the Base Station. For 4-Wire wiring diagram, see page 34.

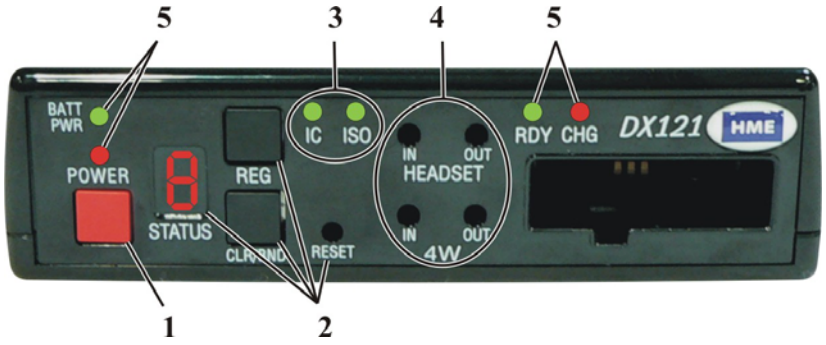
Relay Operation

In the default mode, the relay will operate only when the **ISO** button is pressed. In the **IC SEL** mode, the relay will operate only when the **IC** button is pressed. With either mode, the **IC** button activates audio to the **HEADSET/4-Wire IN/OUT** connector. The **IC SEL** mode is selected by placing a jumper across pins 4 and 5 of the **RELAY** connector.

SECTION 3. EQUIPMENT OPERATION

BASE STATION OPERATION

Front Panel Controls, Indicators and Connector



1. **Power button**

   Press the **POWER** button to turn the power on. A red light above the button will be lit when the Base Station power is on. Press the button again to turn the power off. The light will go off. All settings are preserved when the power is turned off, and will be restored when the power is turned on again.

2. **Registration Controls and Status Indicator**

   Use these controls to register each Beltpac, All-In-One Headset and/or Speaker Station COMMUNICATOR® used with a specific Base Station.

   STATUS display – shows the status of Communicators as they are being registered to the Base Station.

   REG button – is used to set the Base Station in registration mode, so registration can begin.

   CLR/BND button and **RESET** switch – when used together, clear all Communicator registrations from the Base Station.

3. **IC (Intercom) and ISO (Isolate) Receiver Indicators and Controls**

   Green lights indicate whether **IC** or **ISO** is being received.

4. **Adjustments**

   Use a screwdriver to adjust the **HEADSET** and **4W IN** (input) and **OUT** (output) levels.

5. **Indicators**

   POWER – When the DC power is on, the red **POWER** light will be lit.

   BATT PWR – If the main DC power is disconnected while a battery is in the charging port, the Base Station will operate for a short time on the battery's power. When operating on battery power, both the green **BATT PWR** light and the red **POWER** light will be lit.

   CHG – When the battery is charging, the red **CHG** light will be lit.

   RDY – When the battery is fully charged, the green **RDY** light will be lit.

BELTPAC OPERATION

The Beltpac control buttons have a snap action. They will activate when pressed firmly. Use your fingertips, not your fingernails, to press the buttons.

Power On/Off

- **Power On —** Press and release the **PWR** (power) button.
  A voice message in the earpiece will say "Power on, Beltpac #, Version #," and the red power lights at the corners of the **IC** and **ISO** buttons will go on. After a short time, one light will go off and the other will change to green, indicating the Beltpac is ready for use. The **STATUS** indicator on the Base Station will momentarily indicate the ID of the Beltpac.
- **Power Off —** Press and hold the **PWR** button for approximately 2 seconds.
  A voice message in the earpiece will say "Power off," and the green power light will go off.

NOTE: While the Beltpac is transmitting, the green power light will be flashing. The green power light will be on steady whenever the Beltpac is ready, but not transmitting.

ISO and IC

Either the **ISO** or **IC** button can be used to talk to other COMMUNICATOR®s. **IC** will send the audio signal out to intercoms through the **HEADSET** and **4-WIRE** connections on the rear panel of the Base Station. Depending on your Base Station **RELAY** operation setup (See page 22), either the **ISO** button or the **IC** button will activate any outside equipment connected to the **RELAY** connector on the rear panel of the Base Station.

- **Push-To-Talk Mode —** To set the Beltpac for push-to-talk (PTT) communication, with the power off, press and hold the volume-down ▼ and **ISO** buttons while you press and release the **PWR** (power) button. You will hear "Power on, Beltpac #, Version #, Hands-free off" in the headset earpiece. Press and hold the **IC** or **ISO** button while talking.
- **Hands-free Mode —** To set the Beltpac for hands-free communication, with the power off, press and hold the volume-up ▲ and **ISO** buttons while you press and release the **PWR** (power) button. You will hear "Power on, Beltpac #, Version #, Hands-free on" in your headset earpiece. When set up for hands-free communication, the Beltpac can be operated in either hands-free or PTT.
- **ISO Lockout Mode —** To set the Beltpac with the ISO feature locked out, with the power off, press and hold the **IC** button while you press and release the **PWR** (power) button. You will hear "Power on, Beltpac #, Version #, ISO off" in your headset earpiece. When set up for the ISO Lockout mode, the **ISO** button will operate the same as the **IC** button, in either hands-free or PTT communication.
  To reset the ISO feature for normal **ISO** button communication, with the power off, press and hold the **ISO** and **IC** buttons while you press and release the **PWR** (power) button. You will hear "Power on, Beltpac #, Version #, ISO on" in your headset earpiece.

NOTE: The above settings are saved in memory and only need to be repeated when you want to change between hands-free and PTT operation. When changing modes, if both power lights begin blinking, turn the Beltpac off and begin again.
Hands-free and Push-To-Talk mode settings affect both **IC** and **ISO**. Individual adjustment is not possible.

- **Push-To-Talk Mode Operation —** Press and hold the **IC** or **ISO** button while speaking. In PTT operation, audio will be transmitted only while you are pressing the **IC** or **ISO** button.
- **Hands-free Mode Operation —** Quickly press and release the **IC** or **ISO** button to "latch" the transmitter on in the hands-free mode. Talk and listen, as in a normal telephone conversation. Press and release the **IC** or **ISO** button again to "unlatch," to end the conversation. If either button is held down for more than a half second, the Beltpac will function as PTT.

NOTE: In hands-free mode, pressing the **IC** button while latched in **ISO** will latch on **IC**. Pressing the **ISO** button while latched in **IC** will latch on **ISO**.

Volume Up/Down

- **Volume Up Adjustment —** Each time you press and release the volume-up ▲ button, you will hear a higher pitch beep in the earpiece as the volume increases one step. If you press and hold the volume-up button, you will hear beeps of ascending pitch as the volume steps up to maximum. When maximum volume is reached, you will hear "maximum" repeating until you release the volume-up button.
- **Volume Down Adjustment —** Each time you press and release the volume-down ▼ button, you will hear a lower pitch beep in the earpiece as the volume decreases one step. If you press and hold the volume-down button, you will hear beeps of descending pitch as the volume steps down to minimum. When minimum volume is reached, you will hear rapidly repeating beeps until you release the volume-down button.

Sidetone Adjustment

To adjust sidetone, the volume level of your own voice that you hear in the headset earpiece as you speak into the microphone, press and hold the **IC** button while you press the volume-up ▲ or volume-down ▼ button. If you reach the maximum volume level you will hear "Maximum" in the headset earpiece. If you reach the minimum volume level you will hear double beeps. Your sidetone setting will be saved in memory, and does not require readjustment each time the Beltpac is turned off and on.

NOTE: This adjustment only affects the level of your voice in your own headset, not how anyone else hears you.

Microphone Gain Adjustment

Some users talk louder or softer than others. To allow for this, microphone gain adjustment is provided.

To increase microphone gain — Press the volume-up ▲ button while holding down the **ISO** button in the normal operating mode. The microphone gain increase can be monitored through sidetone, or preferably by someone else on a COMMUNICATOR® or at the Base Station.

To decrease microphone gain — Press the volume-down ▼ button while holding down the **ISO** button in the normal operating mode. The microphone gain decrease can be monitored through sidetone, or preferably by someone else on a Communicator or at the Base Station.

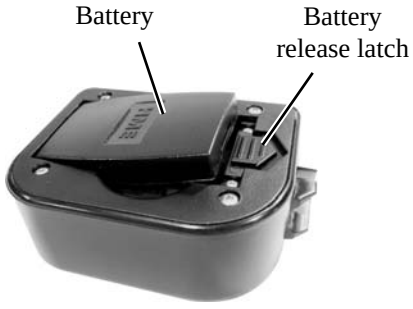
NOTE: You will hear "Maximum" if you attempt to go higher than maximum microphone gain.
You will hear beeps if you attempt to go lower than minimum microphone gain.
Microphone gain will be saved in non-volatile memory and does not require readjustment each time the power is turned on.

Change Batteries

When a battery becomes weak, a voice in the earpiece will say "Change battery." When this happens, take the Beltpac out of its pouch and remove its battery. Slide the arrow-shaped battery-release latch in the direction of the arrow. Pull up on the end of the battery near the battery-release latch and lift the battery out of the Beltpac, or turn the Beltpac over and catch the battery in your hand.

When replacing a battery in the Beltpac, place the end of the battery with the metal contacts into the battery holder on the Beltpac, in the same position as the battery you removed. Press the top of the battery carefully into the battery holder until it snaps in place under the battery-release latch.

Recharge batteries according to the instructions on page 9.



ALL-IN-ONE HEADSET OPERATION

The Headset control buttons will activate when pressed lightly.
Use your fingertips, not your fingernails, to press the buttons.

Power On/Off

- **Power On —** Press and release the power button on the inside of the Headset housing. A voice message in the earpiece will say "Power on, Headset #, Version #" and the power light will go on. The **STATUS** indicator on the Base Station will momentarily indicate the Headset ID number.
- **Power Off —** Press and hold the power button for approximately 3 seconds. A voice message in the earpiece will say "Power off," and the power light will go off.

ISO and IC

The **ISO**, **IC1** or **IC2** buttons can be used to talk to other COMMUNICATOR®s. **IC** will send the audio signal out to intercoms through the **HEADSET** and **4-WIRE** connections on the rear panel of the Base Station.
Depending on your Base Station **RELAY** connection setup (See page 22), either the **ISO** button or the **IC** button will activate any outside equipment connected to the **RELAY** connector on the rear panel of the Base Station.

- **Push-To-Talk Mode —** To set the Headset for Push-To-Talk (PTT) communication, with the power off, press and hold the volume-down ▼ and **ISO** buttons while you press and release the power button. You will hear "Power on, Headset #, Version #, Hands-Free off" in the earpiece.
  Press and hold the **IC1**, **IC2** or **ISO** button while talking.
- **Hands-Free Mode —** To set the Headset for Hands-Free (HF) communication, with the power off, press and hold the volume-up ▲ and **ISO** buttons while you press and release the power button. You will hear "Power on, Headset #, Version #, Hands-Free on" in the earpiece. When set up for Hands-Free communication, the Headset can be operated in either HF or PTT.
- **ISO Lockout Mode —** To set the Headset with the ISO feature locked out, with the power off, press and hold the **IC1** button while you press and release the power button. You will hear "Power on, Headset #, Version #, ISO off" in your Headset earpiece. When set up for the ISO Lockout mode, the **ISO** button will operate the same as the **IC1** button, in either hands-free or PTT communication.
  To reset the ISO feature for normal **ISO** button communication, with the power off, press and hold the **ISO** and **IC1** buttons while you press and release the power button. You will hear "Power on, Headset #, Version #, ISO on" in your Headset earpiece.
- **Lights-off Mode —** To prevent the power and transmit lights from coming on during headset operation, press and hold the **IC2** button while you press the power button to turn the headset on.
  To return the lights to their normal functions, turn the power off and on again without pressing the **IC2** button.

NOTE: The above settings are saved in memory and only need to be repeated when you want to change between HF and PTT operation. When changing modes, if both power lights begin blinking, turn the Headset off and begin again. Hands-Free and Push-To-Talk mode settings affect both **IC** and **ISO**. Individual adjustment is not possible.

- **Push-To-Talk Mode Operation —** Press and hold the **IC1**, **IC2** or **ISO** button while speaking. In PTT operation, audio will be transmitted only while you are pressing the **IC1**, **IC2** or **ISO** button.
- **Hands-Free Mode Operation —** Quickly press and release the **IC** or **ISO** button to "latch" the transmitter on in the HF mode. Talk and listen, as in a normal telephone conversation. Press and release the **IC** or **ISO** button again to "unlatch," to end the conversation. If either button is held down for more than a half second, the Headset will function as PTT.

NOTE: In Hands-Free mode, pressing the **IC1** or **IC2** button while latched in **ISO** will latch on **IC**. Pressing the **ISO** button while latched in **IC** will latch on **ISO**.

Volume Up/Down

- **Volume Up Adjustment —** Each time you press and release the volume-up ▲ button, you will hear a higher pitch beep in the earpiece as the volume increases one step. If you press and hold the volume-up button, you will hear beeps of ascending pitch as the volume steps up to maximum. When maximum volume is reached, you will hear "maximum" repeating until you release the volume-up button.
- **Volume Down Adjustment —** Each time you press and release the volume-down ▼ button, you will hear a lower pitch beep in the earpiece as the volume decreases one step. If you press and hold the volume-down button, you will hear beeps of descending pitch as the volume steps down to minimum. When minimum volume is reached, you will hear rapidly repeating beeps until you release the volume-down button.

Microphone Gain Adjustment

Some users talk louder or softer than others. To allow for this, microphone gain adjustment is provided.

To increase microphone gain — Press the volume-up ▲ button while holding down the **ISO** button in the normal operating mode. The microphone gain increase can be monitored through sidetone, or preferably by someone else on a COMMUNICATOR® or at the Base Station.

To Decrease microphone gain — Press the volume-down ▼ button while holding down the **ISO** button in the normal operating mode. The microphone gain decrease can be monitored through sidetone, or preferably by someone else on a Communicator or at the Base Station.

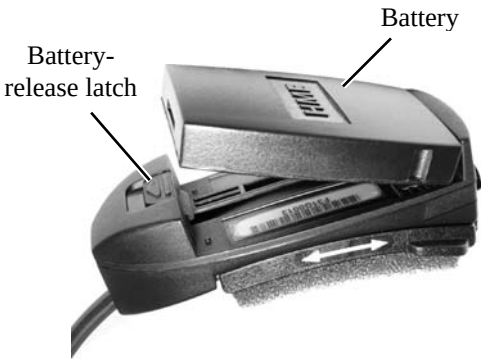
NOTE: You will hear "Maximum" if you attempt to go higher than maximum microphone gain.
You will hear two beeps if you attempt to go lower than minimum microphone gain.
Microphone gain will be saved in non-volatile memory and does not require readjustment each time the power is turned on.

Change Batteries

When a battery becomes weak, a voice in the Headset will say "Change battery." When this happens, remove the battery from the headset by carefully sliding the battery-release latch and lifting the battery out.

When replacing a battery in the Headset, place the end of the battery with the metal contacts into the battery holder on the Headset, in the same position as the battery you removed. Press the top of the battery carefully into the battery holder until it snaps in place under the battery-release latch.

Recharge batteries according to the instructions on page 9.



SPEAKER STATION OPERATION

Headset Connection

If you are using a headset with the Speaker Station, plug it into the headset connector. When using a headset, if the red light over the **SPEAKER** button is on, incoming communication can be heard through the headset and the speaker. If the red light over the **SPEAKER** button is off, incoming communication can only be heard through the headset.

Push-To-Talk (PTT) or Hands-Free (HF) Mode Setting

- Be sure the WS200 power is off.
- To set up the Speaker Station for operation in the PTT mode, press and hold the **VOLUME** down ▼ and **ISO** buttons while you press and release the **POWER** button to turn the unit on. Then release the **VOLUME** down ▼ and **ISO** buttons.
- To set up the Speaker Station for operation in the HF mode, press and hold the **VOLUME** up ▲ and **ISO** buttons while you press and release the **POWER** button to turn the unit on. Then release the **VOLUME** up ▲ and **ISO** buttons.

NOTE: Mode settings are saved in memory, and only need to be reset if you want to change between PTT and HF operation. Mode settings affect both ISO and IC communication.

Routine Operation

Power On/Off

- **To turn WS200 power on**, press and release the **POWER** button.
  - Red lights will go on over the **POWER**, **ISO** and **IC** buttons.
  - If listening with a headset, or the speaker is turned on, you will hear "Power on, Speaker #, Version #."
  - The light over the **ISO** button will go off.
  - The light over the **IC** button will change to green.
- **To turn WS200 power off**, press and hold the **POWER** button for 3 seconds.

ISO and IC

The **ISO**, **IC1** or **IC2** buttons can be used to talk to other COMMUNICATOR®s. **IC** will send the audio signal out to intercoms through the **HEADSET** and **4-WIRE** connections on the rear panel of the Base Station. Depending on your Base Station **RELAY** connection setup (See page 22), either the **ISO** button or the **IC** button will activate any outside equipment connected to the **RELAY** connector on the rear panel of the Base Station.

Push-To-Talk Mode

- Press and hold the **ISO** or **IC** button while speaking.
  - The green light over the button will be flashing when the unit is transmitting.
- Release button to listen on headset speaker or internal speaker, if "**ON**."
  - The green light over the button will be on steady.
- Adjust volume level with **VOLUME** up ▲ and down ▼ buttons if necessary.

Hands-Free Mode

You must be using a headset plugged into the Speaker Station, and the speaker must be off for hands-free operation.

- Quickly press and release the **ISO** or **IC** button.
  - The green light over the button will be flashing.
- Speak and listen as in a normal telephone conversation.
- Adjust volume level with the **VOLUME** up ▲ and down ▼ buttons if necessary.
- Press and release the **ISO** or **IC** button again to end communication.
  - The green light over the **IC** button will be on steady.
- Press and release the **ISO** or **IC** button if you want to speak again.
  - The green light over the button will begin flashing again.
- Pressing and holding the **ISO** or **IC** button for more than a half second will result in PTT operation.

ISO Lockout Mode

To set the Speaker Station with the ISO feature locked out, with the power off, press and hold the **IC** button while you press and release the **POWER** button. You will hear "Power on, Speaker #, Version #, ISO off." When set up for the ISO Lockout mode, the **ISO** button will operate the same as the **IC** button, in either hands-free or PTT communication.
To reset the ISO feature for normal **ISO** button communication, with the power off, press and hold the **ISO** and **IC** buttons while you press and release the **POWER** button. You will hear "Power on, Speaker #, Version #, ISO on."

CALL Light Function

If the CL200 (optional) Call Light button is pressed, or a call tone from an RTS or ClearCom intercom system is received through the CL200 on the 2-wire circuit:

- One short beep will sound in the Speaker Station or headset, and will also be heard through all Beltpacs or All-in-one Headsets registered to the same Base Station as the Speaker Station.
- The yellow **CALL** light next to the **POWER** button on the Speaker Station will flash 3 times and pause, then flash 3 times and pause, then flash 3 final times.

Headset Microphone Gain Adjustment

Some users speak louder or softer than others. The headset microphone gain adjustment helps to compensate for these differences, raising or lowering the voice level of the user speaking into the microphone. Increase microphone gain for softer voices, decrease for louder voices.

- To adjust microphone gain, first be sure the internal speaker is off.
- Press and hold the **ISO** button while pressing the **VOLUME** up ▲ or down ▼ arrow.
  — When you reach maximum microphone gain, you will hear "Maximum."
  — When you reach minimum microphone gain, you will hear a double beep.
  There are 16 steps between maximum and minimum microphone gain levels.

Headset Sidetone Adjustment

Sidetone is the level of your own voice that you hear in the headset earpiece as you speak into the microphone.

- To increase or decrease the sidetone level, first be sure the internal speaker is off.
- Press and hold the **IC** button while pressing the **VOLUME** up ▲ or down ▼ arrow.
  — When you reach maximum sidetone level, you will hear "Maximum."
  — When you reach minimum sidetone level, you will hear a double beep.
  There are 5 steps between maximum and minimum sidetone levels.

NOTE: A trim pot is provided for fine tuning adjustments with a small screwdriver, through the hole labeled **SIDE TONE** on the left side of the Speaker Station.
This adjustment only affects the level of your voice in your own headset, not how anyone else hears you.

Changing Batteries

When batteries are becoming weak, you will hear "Change battery" from the speaker or headset. When this happens, remove the battery sled from the Speaker Station and replace the six batteries in it with fresh AA batteries. Be sure battery polarity is correct when replacing the batteries.

Rechargeable BAT850 Batteries

If you are using the optional HME BAT850 Rechargeable Battery, remove the battery from the Speaker Station and replace it with a fully charged battery. Recharge the battery in the optional AC850 Battery Charger according to the instructions received with the charger. Charging time is approximately 3 hours.

AC850 Battery Charger

Auxiliary Speaker Connection

An 8 ohm auxiliary speaker can be connected to the right side of the Speaker Station, using the enclosed 2-position connector plug. Adjustments affecting the Speaker Station will also affect the parallel auxiliary speaker.

SECTION 4. TROUBLESHOOTING

If you are unable to correct any of the problems described below, contact your dealer for assistance.

- **Power light on Base Station does not come on.**

  Be certain power cords are properly connected to Base Station, power supply and electrical outlet.

- **COMMUNICATOR® power lights do not turn green, and "out of range" is heard.**

  Be certain your Base Station power is on. Turn Communicator and Base Station power on and off.

  You may be too far from the Base Station. The range varies with each location's layout.

- **When trying to register, it keeps saying registration failed.**

  Check to be sure that the STATUS window only goes blank, and does not show a registration number. Follow the instructions on clearing the registrations as found on page 14, 16 or 20, and repeat the registration procedure.

- **Others cannot hear me when I talk.**

  If you are using a Beltpac or local headset, be certain the headset connector is correctly plugged in to the Beltpac or Base Station.

- **People on the 4-Wire intercom cannot hear me or I cannot hear them.**

  Be certain the cables are securely connected and the 4-Wire intercom is on.

- **People on the RTS/ClearCom systems cannot hear me or I cannot hear them.**

  Be certain the cables are securely connected and the 2-wire intercom is on.

2400MHz cordless telephone interference — If there is a 2400MHz cordless telephone nearby, interference may occur. However, because the DX121 is a frequency-hopping system, this problem is unlikely. If it does occur, changing frequencies on the telephone may alleviate the problem. If not, move the phone as far as practical from the Base Station, or use another type phone.

In the event of an electrical power outage — such as from a lightning storm or power generator failure, if you experience problems with your HME equipment after the electricity comes on again, unplug the AC power supplies from their electrical outlets and wait 15 seconds, then plug them back in.

SECTION 5. TECHNICAL DATA

DX121 EQUIPMENT SPECIFICATIONS

BS121 Base Station

GENERAL —

Frequency Range:	All, 2400 to 2483.5 MHz Low, 2401.92 to 2439.94 MHz High, 2443.39 to 2481.41 MHz
Frequency Response:	200 Hz to 3.5 kHz
Power Requirements:	100-240VAC, 50-60Hz or 12-14VDC
Temperature Range:	32-122°F (0-50°C)
Size:	1.62" x 5.50" x 7.88" (4.1 x 14 x 20 cm)
Weight:	1.2 lbs. (.59 kg) with battery
# of Beltpacs per Base:	4 can be registered Only 1 can have full-duplex communication at a time
4-Wire I/O:	600Ω balanced, level adjustable, simultaneous operation with headset
Headset I/O:	200Ω, level adjustable
Front Panel Controls:	Power button, REGister Beltpac and CLR/BND buttons, RESET switch, HEADSET IN and OUT level adjustments, 4-Wire IN and OUT level adjustments
Front Panel Indicators:	POWER LED, STATUS display, IC and ISO Receive LEDs, Battery Power LED, Battery Charger RDY and CHG LEDs
Rear Panel Controls:	Primary/Secondary switch
Antenna Type:	External ½ -wave dipole (R-TNC connector) RX/TX horizontal/vertical diversity
System Distortion:	<2%
Communication Security:	64-bit encryption dual-slot diversity

TRANSMITTER —

Type:	Frequency hopping, spread spectrum
Transmit Power:	100mW burst
Modulation Type:	Gaussian filtered FSK, TDM
Frequency Stability:	13 ppm
Harmonics/Spurious:	Exceeds FCC and ETSI specifications over temperature

RECEIVER —

Type:	Frequency hopping, spread spectrum
RF Sensitivity:	<–90dBm w 10^{-3} BER
Frequency Stability:	13 ppm
Distortion:	<2%

BATTERY CHARGER —

Battery charging time:	<3 hours

BP200 Beltpac

* Frequency Range:	2400 MHz – 2483.5 MHz
Antenna:	Internal, horizontal/vertical diversity
Frequency Response:	200 Hz to 3.5 kHz
Transmit Power:	100mW burst
RF Sensitivity:	<–90dBm w 10^{-3} BER
Battery Requirements:	3.6V lithium ion, rechargeable
Battery Life:	Hands-free – up to 14 hours, PTT – up to 20 hours
Temperature Range:	32-122°F (0-50°C)
Weight:	7.4 oz (.21 kg) with battery and pouch
Headset Connector:	4-pin, mini-DIN
Microphone:	Electret
Headset Output:	160mW into 32Ω
Controls:	Power, Volume-up ▲, Volume-down ▼, IC, ISO
Indicators:	Dual-color LED (red/green)

WH200 All-In-One Headset

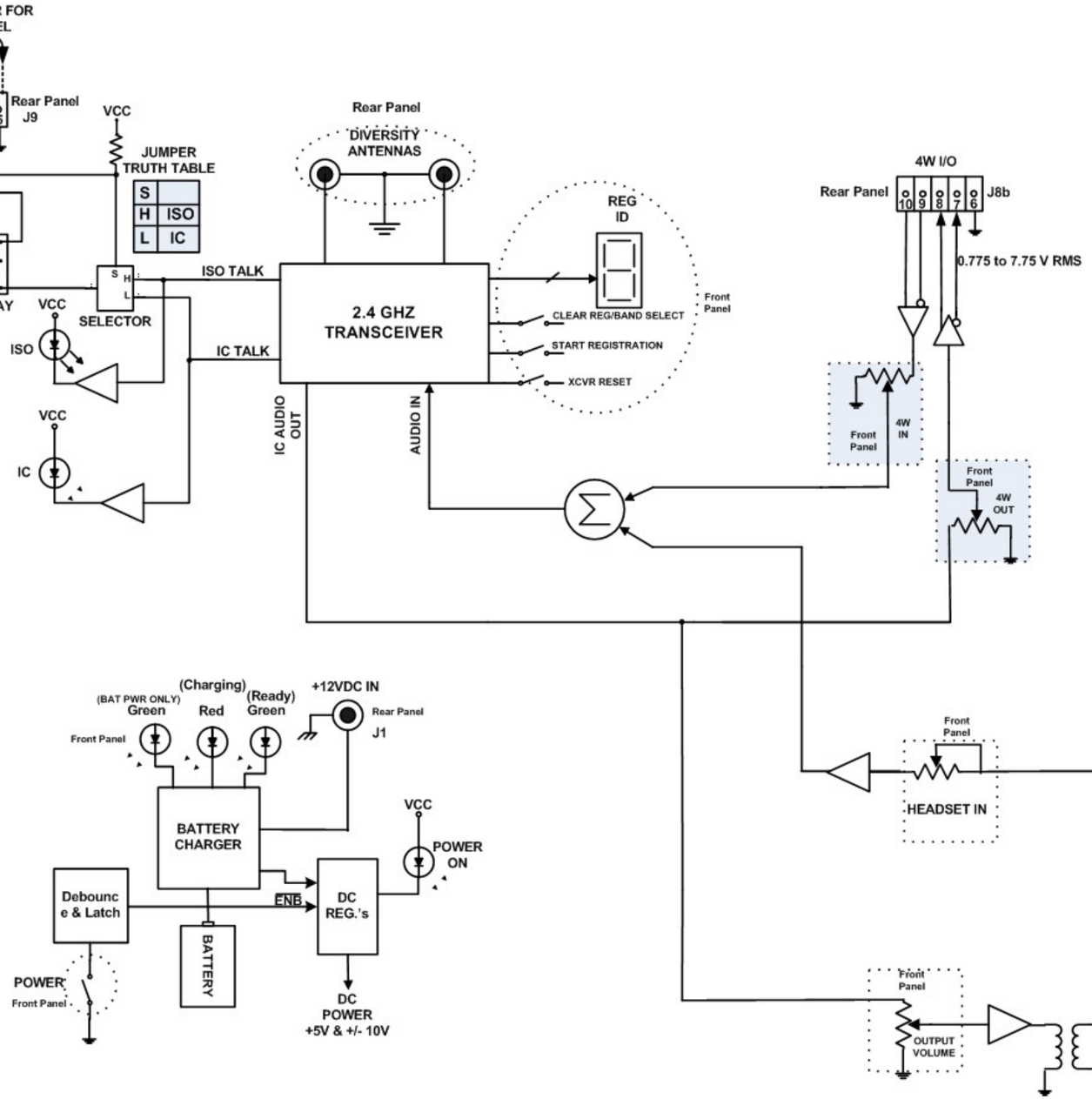
* Frequency Range:	2400 MHz – 2483.5 MHz
Antenna:	Internal
Frequency Response:	200 Hz to 3.5 kHz
Transmit Power:	100mW burst
RF Sensitivity:	<–90dBm w 10^{-3} BER
Battery Requirements:	3.6V lithium ion, rechargeable
Battery Life:	Hands-free – up to 14 hours, PTT – up to 20 hours
Temperature Range:	32-122°F (0-50°C)
Weight:	5.7 oz (.16 kg) with battery
Microphone:	Electret
Headset Output:	160mW into 32Ω
Controls:	Power, Volume-up ▲, Volume-down ▼, IC1, IC2, ISO
Indicators:	Transmit LED (red/green), Power LED (red/green)

WS200 Speaker Station

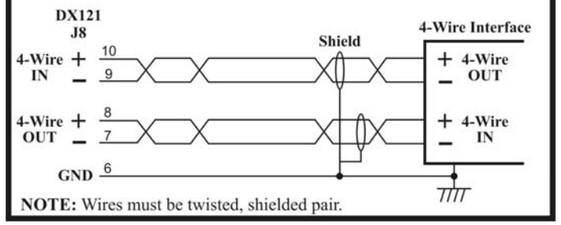
* Frequency Range:	2400 – 2483.5 MHz
Antenna:	Internal
Frequency Response:	200 Hz to 3.5 kHz
Power Requirements:	Six AA batteries (NiMH optional), 12-14VDC or 100-240VAC, 50-60Hz
Temperature Range:	32-122°F (0-50°C)
Size:	9.38” x 5.16” x 3.34” (23.83 x 13.11 x 8.48 cm)
Weight:	2.56 lb with battery (1.16 kg)
Microphone:	Electret
Speaker:	1.5W min into 8Ω
Headset Output:	200mW into 32Ω
Controls:	Power, Speaker, ISO, Volume-down ▼, Volume-up ▲, IC
Indicators:	Power LED (red), Call LED (yellow), Speaker LED (red), ISO LED (red/green), IC LED (red/green)
Connectors:	4-pin mini-DIN Headset, 12-14VDC, 8Ω speaker

* NOTE: Communicators will follow the frequency range determined by the setting on the Base Station (e.g. All, Low or High).

BASE STATION BLOCK DIAGRAM

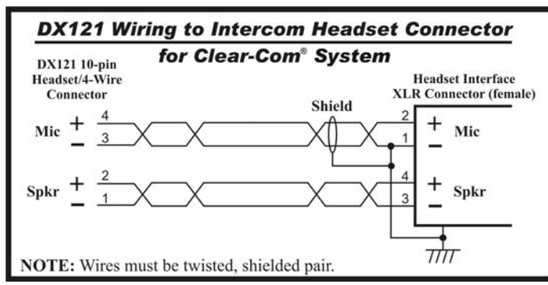


DX121 Wiring to 4-Wire Connector

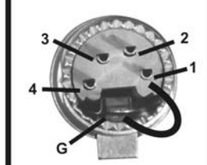


NOTE: Wires must be twisted, shielded pair.

DX121 Wiring to Intercom Headset Connector for Clear-Com® System

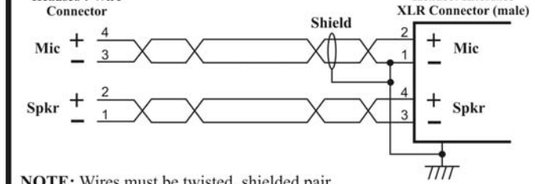


NOTE: Wires must be twisted, shielded pair.

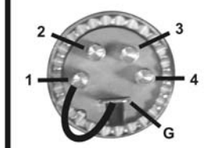


Note: 1/Coax shield is jumpered to G/Ground

DX121 Wiring to Intercom Headset Connector for RTS® System



NOTE: Wires must be twisted, shielded pair.



Note: 1/Coax shield is jumpered to G/Ground

SECTION 6. INDEX