

# **DX340|HD**

# **HD Wireless Headset System**



**Operating Instructions** 

# TABLE OF CONTENTS

SECTION 1. INTRODUCTION	1
BASIC 5-COACH SYSTEM	1
EXPANDED 10-COACH SYSTEM	1
SECTION 2. EQUIPMENT IDENTIFICATION	2
STANDARD EQUIPMENT	2
OPTIONAL EQUIPMENT	3
EQUIPMENT FEATURES	4
Base Station	4
Beltpac	
SECTION 3. EQUIPMENT SETUP	
BATTERY CHARGER	
BASE STATION	
Optional Battery Operation of Base Station	
SECTION 4. FREQUENCY INTERFERENCE AVOIDANCE	
WI-FI INTERFERENCE AVOIDANCE	
ADAPTIVE FREQUENCY HOPPING	
Background	
MULTI-BASE INTERFERENCE AVOIDANCE	
Active (Manual) Secondary Base Sync	
Power Cycle / Reset	
Passive (Automatic) Sync	
Beltpacs	
Clear All Registration	
DX SERIES LED AID	
SECTION 5. MULTIPLE BASE STATIONS	
Base Switch (Disabled in this version).	
Audio Connection	
Single/Dual Channel Setting	
Base Station Microphone Gain Adjustment	. 17
Multiple Base Station Connection	. 18
SECTION 6. REGISTRATION	. 19
BELTPACS	
Beltpac Operating Mode Setup	
Beltpac Adjustments	
SECTION 7. EQUIPMENT OPERATION	
THE BASICS	
Base Station Operation	
Beltpac	
Changing Batteries	
OPTIONAL PEMOTE ANTENNA INSTALLATION	
OPTIONAL REMOTE ANTENNA INSTALLATION	
SECTION 8. TROUBLESHOOTING	
FREQUENTLY ASKED QUESTIONS	
SECTION 9. TECHNICAL DATA	
EQUIPMENT SPECIFICATIONS	
Base Station	
Beltpac	
SECTION 10. SECTION INDEX	
SECTION 11. REGULATORY INFORMATION	
General battery safety instructions for battery model BAT41, BAT50, BAT60 - English	
Directives de sécurité générales pour les modèles de batterie suivants : BAT41, BAT50, BAT60 - French	
FCC NOTICE.	. 35

# **SECTION 1. INTRODUCTION**

The DX340|HD provides secure communication among the coaching staff.

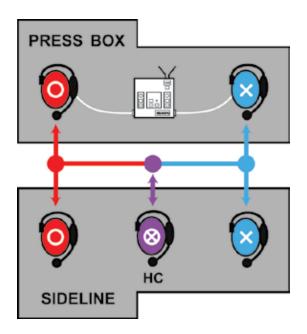
Spotters in the press box can communicate with offense "O" only, defense "X" only or "ALL" coaches via headsets connected directly to the base station.

Coaches on the sideline wear beltpacs with headsets to communicate with each other and the spotters.

Beltpacs can be set up for communication with any combination of offense, defense and ALL.

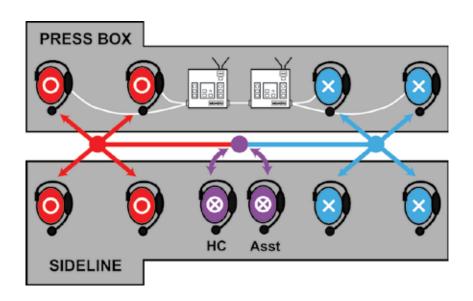
This manual includes detailed setup and operating instructions for your DX340|HD system.

# BASIC 5-COACH SYSTEM



- 1 base station
- 3 beltpacs
- 5 headsets

# EXPANDED 10-COACH SYSTEM



- 2 base stations
- 6 beltpacs
- 10 headsets

# SECTION 2. EQUIPMENT IDENTIFICATION

# STANDARD EQUIPMENT



# **OPTIONAL EQUIPMENT**

Headset with dual ear muffs Model #HS15D



Battery charger for base station batteries Model # AC850



Headset extension cable, 6 ft (1.83 meter)



Remote antenna kit with 30 foot (9.14 meter) cable and bracket



Rechargeable battery for base station Model # BAT850



Remote antenna kit with 6 foot (1.83 meter) cable and bracket



Adapter cable for headset with dynamic microphone and XLR connector

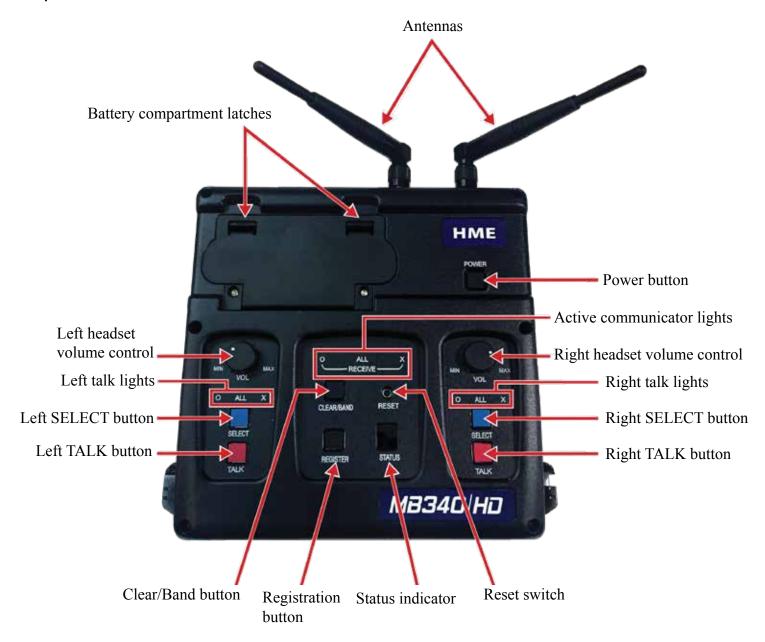
Model # MD-XLR4F, MD-XLR4M, MD-XLR5F



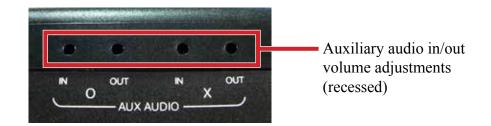
# **EQUIPMENT FEATURES**

### **Base Station**

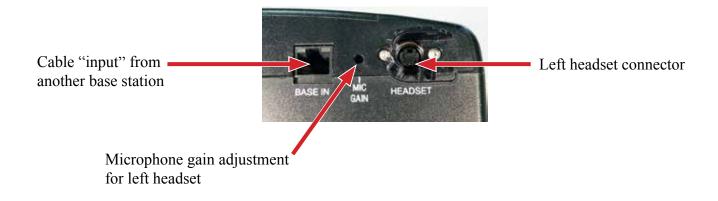
**Top Panel** 

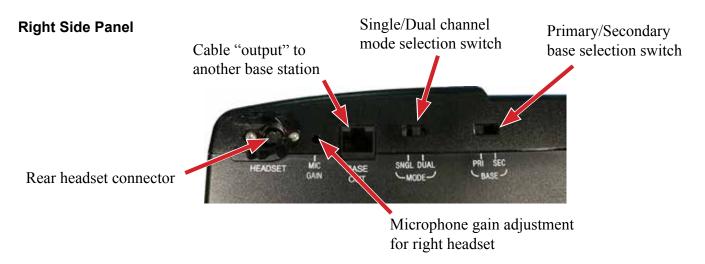


#### **Front Panel**



#### **Left Side Panel**







# **Beltpac**



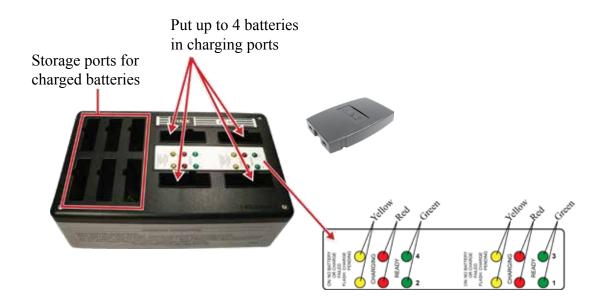
# SECTION 3. EQUIPMENT SETUP

# **BATTERY CHARGER**

**NOTE:** Set up the battery charger and charge all beltpac batteries while you are setting up the base station.



- 1 Connect power supply to charger and electrical outlet.
- 2 Charge all beltpac batteries. Charging time is approximately three hours.



#### Status lights next to each charging port

#### Red light

• Stays on steady while battery is charging

#### **Green light**

Goes on when battery is fully charged

#### Yellow light

- Stays on steady when charging port is empty, or if the inserted battery will not charge See instructions on side of charger.
- Flashes if battery is too hot to charge, charge will begin when battery cools down.

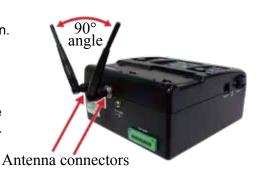
# **BASE STATION**

1 Fasten both antennas onto the connectors on the back of the base station.

Tighten at 90° angle.

..g...o.. at oo a...g.o.

Plug the power adapter into the base station, and tighten the nut onto the connector. Next, plug power cord into power adapter and electrical outlet.



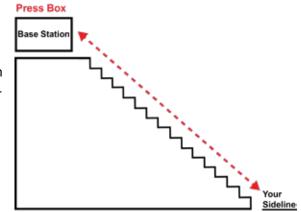


**NOTE:** A fully charged battery can be kept in the base station as a backup in case of AC power interruption.

3 Set up the base station in the press box with no objects blocking the line-of-sight from base station to your sideline.

If interference occurs due to objects in the line-of-sight or sun screen on press box windows, see <u>Remote Antenna Installation</u> on page 25.

- 4 Press **POWER button** to turn power on.
- 5 Plug headsets into the base station, inserting headset plugs all the way into connectors.





## **Optional Battery Operation of Base Station**

A base station can operate on battery power when AC power is unavailable.

**NOTE:** A fully charged battery can be kept in the base station as a backup in case of AC power interruption.

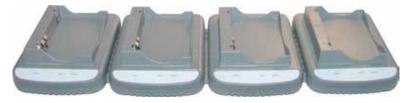
Typical base station battery life when used continuously is as follows:

- 1 If you are using the battery sled, insert six "AA" batteries.
- 2 Pull back on the battery compartment latches, and lift the battery compartment cover on the base station.



- **3** Insert the battery sled or rechargeable BAT850 battery (optional) into the battery compartment, and close the cover.
- 4 If you are using the BAT850 battery, insert it in the AC850 battery charger (optional) for recharging after each use.

Follow the instructions received with the charger. Charging time is approximately 3 hours.



AC850 Battery Charger

**NOTE:** When base station battery power is low, everyone connected or registered to that base station will hear a headset tone that repeats every 8 seconds. Additionally, both headset select lights will blink.

### SECTION 4. FREQUENCY INTERFERENCE AVOIDANCE

Radio Frequency Interference may be heard in a headset as a mechanical digitized quality to voice, breaking up of the audio or an intermittent muting of the sound. This may occur whenever other equipment such as Wi-Fi systems or wireless DMX systems use the same frequency band.

The DX340 can be set to avoid interference on Single-Base setup, or it can be set to avoid interference in Multi-Base setups using **Active (Manual) Secondary Base Sync** or **Passive (Automatic) Secondary Base Sync**.

All DX Series wireless intercom systems now feature Spectrum Friendly™ technology for interference-free operation in the increasingly crowded 2.4GHz frequency band. This new technology enables broadcast and theatrical production crews to avoid emerging frequency conflicts by designating the 2.4GHz operating frequency range: **Low-band**, **High-band** or **Full-band**.



#### All Band

When the DX340|HD is configured in **All Band**, the Base Station uses its entire broadcast frequency range, offering the greatest opportunity for headsets to communicate with the base. Base Stations are shipped in the "A" position, which is the default setting. However, when in **All Band**, the base can be susceptible to interference from Wi-Fi routers and Wi-Fi access points. To avoid this interference, the DX340|HD offers two other bands: **Low** and **High**. 2400 to 2483.5 MHz is the operating frequency range.



#### **Low Band**

Using **Low Band** sets the frequency range in which the Base Station operates to the lower end of its broadcast range. If you know that the Wi-Fi access point is set to Wi-Fi channel 11, then you should set the base station to operate in "Low" band so the base avoids the Wi-Fi channel 11 frequency range. <u>2401.92 to 2439.94 MHz</u> is the operating frequency range.



#### **High Band**

Using **High Band** sets the frequency range in which the Base Station operates to the upper end of its broadcast range. If you know that the Wi-Fi access point is set to channel 1, then you should set the base station to operate in "High" band so the base avoids the Wi-Fi channel 1 frequency range. <u>2443.39 to 2481.41</u> MHz is the operating frequency range.

Follow these steps to avoid interference on a single base setup:

1 Power up the base station. An "B" will appear on the STATUS display for 0.5 seconds.

The selected, default Frequency Band L, H, H or E will display for a few seconds.

Radio Start symbol "H" will display for 0.5 seconds. The display will turn blank.

2 Once the STATUS display is blank, press and hold the CLR/ BND button.

While you are still holding the **CLR/BND button**, press and hold the **REG button** and wait until an L, H,  $\exists$  or E appears. Release both buttons. Base stations are shipped in the  $\exists$  (default) position.

**NOTE:** The EU (European) version of the base station is shipped in AFH mode E, described on page 12.













3 Press the CLR/BND button to cycle through parts of the frequency band, (L = Low end, H = High end, R = All and E = AFH), and stop on the desired setting.



4 Wait until "c" appears on the display.

**NOTE:** A "c" will only appear on the STATUS display if you are setting the frequency band the first time, or you are changing the setting.



**5** Register all beltpacs to be used with each base station as instructed on page 19.

**NOTE:** If you change a base station's frequency band setting, you will have to re-register all beltpacs that were registered to that base station.



Small "□" indicates that the base station is open for registration

# WI-FI INTERFERENCE AVOIDANCE

To avoid interference with Wi-Fi systems, it is recommended to set the Wi-Fi system to something other than channel 6 or 7. Your DX340 should be set to the high or low band opposite any Wi-Fi frequency range in use.

DX340 Low Band = 2.4000-2.4400 GHz								DX34	) High	Band =	2.4433	-2.4830	GHz		
Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Wi-Fi Frequencies	2.412	2.417	2.422	2.427	2.432	2.437	2.442	2.447	2.452	2.457	2.462	2.467	2.472	2.484	GHz

**Note:** This feature is not available when the base station is in AFH mode.

# ADAPTIVE FREQUENCY HOPPING

In order to reduce interference with other equipment and comply with these new regulations, HME has implemented an **Adaptive Frequency Hopping** (AFH) mode for the new DX EU base stations. The key idea behind AFH is using only the good frequencies, or channels, unoccupied by other equipment. The system scans for other signals and avoids these signals during operation. Since the radio environment is constantly changing, there is a continuous process of scanning for used frequencies and updating the list of good channels.

The HME system utilizes 46 discrete frequencies, or channels, within the 2.4 GHz spectrum in order to communicate voice and data. The process of deciding which channels should be used is a 3-stage process. The process includes scanning for occupied channels, the broadcast of a channel exclusion list and the use of the exclusion list. The process is completed in three steps coexisting in time.

Below is the process shown in Time. First, the system performs a channel scan to determine occupied channels. This list is then broadcast to the communicator. The communicators and base station will use this list during period three. The process is continuous, and as is illustrated below, the list could be constantly changing. Depending on the radio environment, a maximum of 46 channels, and a minimum of 15 channels may be used by the system at any time.

**AFH** (E) - (European Mode) Advanced Frequency Hopping searches for the best frequency.

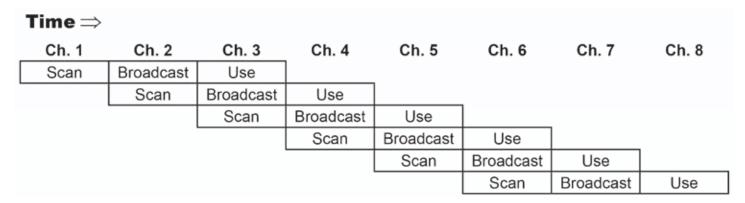


### **Background**

The HME DX wireless intercom systems utilize a **Frequency Hopping Spread Spectrum** (FHSS) radio in order to provide robust communications.

This system operates in the unlicensed 2.4 GHz band. With the proliferation of other devices over the past few years in the same 2.4 GHz band, instances where these devices and systems can interfere with each other has greatly increased.

To further complicate matters, the European Union has introduced new radio standards for equipment operating in this band in an attempt to reduce interference between equipment from different manufacturers. This European Telecommunications Standards Institute (ETSI) harmonized European standard is known as EN 300 328.



#### **EU Bases are shipped in the AFH (E-mode)**

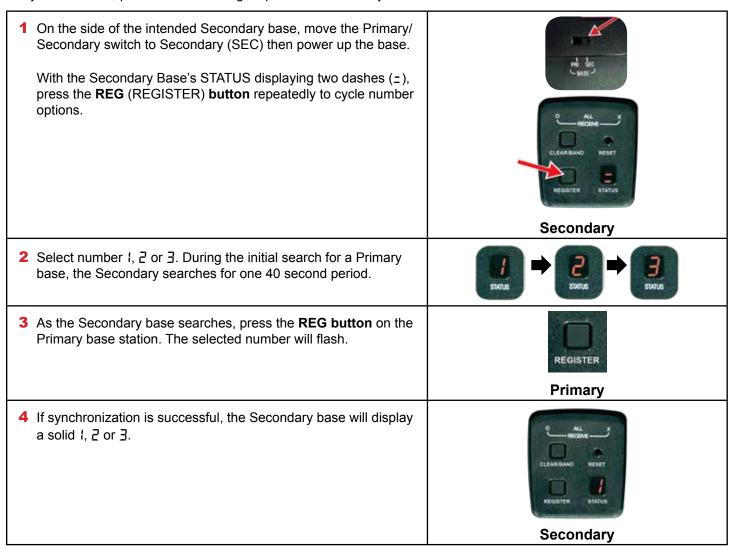
Do not tamper with the AFH mode if you are operating in a region that requires compliance with ETSI EN300 328. Changes and modifications not expressly approved by Clear-Com, LLC an HM Electronics, Inc. company could void the user's authority to operate this equipment.

# MULTI-BASE INTERFERENCE AVOIDANCE

### **Active (Manual) Secondary Base Sync**

This setup allows up to three Secondary bases to be manually placed in sync status numbers 1, ≥ or ∃ respectively. After synchronization, the Secondary base is set to avoid frequency hopping collision.

To sync the bases, perform the following steps to the Secondary base:



#### If the Initial Synchronization attempt fails...

• The Active Sync Secondary base will become unsynchronized Primary and STATUS will display three dashes (Ξ). A power cycle or reset is required to re-sync.



#### If Sync Loss occurs...

• The Active Sync Secondary base will automatically attempt a re-sync for one 60 second period. If the re-sync fails, three dashes (Ξ) will be displayed. A power cycle or reset is required to re-sync.

# **Power Cycle / Reset**

If required to initially sync or re-sync the Secondary base with the Primary, power cycle the Secondary base or use a paper clip (or like object) to press the **RESET button**.

- If the Secondary base <u>has never</u> previously synced with a Primary base, it will search for a Primary for 40 seconds.
- If the Secondary base <u>has</u> previously synced with a Primary base, it will attempt a re-sync for 60 seconds.



### **Passive (Automatic) Sync**

This method automatically synchronizes a Secondary base to a *Primary* base without the need to assign a secondary number to the Secondary base [as in Active (Manual) sync]. Any number of bases can be synced to a Primary in Passive Sync mode. The normal synchronization process is performed, however the Primary does not need to be manually placed in registration mode [as in the Active (manual) sync].

On the side of the intended Secondary base, move the Primary/Secondary switch to Secondary (SEC) then power up the base. With the Secondary Base's STATUS displaying two dashes (=), press the **REG** (REGISTER) **button** repeatedly to cycle options. Secondary 2 Bypass options 1, 2 and 3 to select "P". 3 Secondary base will begin to sync, and the display alternates between "P" and "\_". Initial sync takes 40 seconds. If the Secondary base sync fails again, it will attempt again for a second 40 seconds. 4 If sync is successful, a solid "P" will be displayed. Secondary

#### If the Initial Synchronization attempt fails...

 The Passive Svnc Secondary base will become Passive Svnc Primary and STATUS display the "\textsign" symbol. A power cycle or reset is required to re-sync.

#### If Sync Loss occurs...

• The Passive Sync Secondary base automatically makes a 60 second attempt to sync. If the re-sync fails, the "\textsit" symbol is displayed. A power cycle or reset is required to re-sync.

### Power Cycle / Reset

- If the Secondary base has never previously synced with a Primary base, it will search for a Primary for up to two 40 second periods.
- If the Secondary base has previously synced with a Primary base, it will attempt a re-sync for 60 seconds.

During reset, the re-sync attempt occurs and the display alternates between "F" and "-". If synchronization is achieved, the Secondary base STATUS will display a solid "P".







### **Beltpacs**

During synchronization or re-synchronization, beltpacs cannot be used for audio communication. A blinking red LED will be displayed. Voice prompt will announce "out of range."

After sync or re-sync, beltpacs already registered to the Base, will automatically re-link with the Base, whether the Base sync or re-sync was successful or not. After registration or re-linking, the beltpac number will blink three times on the display.

New beltpacs can always be registered to a Base, regardless of the operating mode: Primary, Active or Passive.

**Note**: In situations where an HME EOS base is close by, the DX340 may passively synchronize to the EOS base if it is within radio range. If not, follow the **Clear All Registration** process detailed below. Power off all other potential Primary bases, and re-synchronize the Secondary base.

### **Clear All Registration**

To clear all registration:

Hold down the **CLR/BND button** first and then power the base on, when you see the "c" on the LED display release the **CLR/BND**.

NOTE: The display indicates that the registry of a base station has been cleared of all beltpacs and Secondary base stations that were registered to the base station.

Another method to clear the registry would be to start by holding down the **CLR/BND button** first and then pressing the **RESET button** until you hear a small click and then release the **RESET button**. If done successfully you will see a small "c" on the LED display. We recommend you use a very small paper clip.

# DX SERIES LED AID



Powering on any DX base station will produce on the LED display the number "\( \mathbb{B} \)" for approximately 0.5 seconds.



Blank display indicates the primary base is ready for operation.

You can register belt packs under this condition.



Two horizontal bars (=) indicate that the base is in secondary mode and ready to be synced with a primary base. You cannot register beltpacs in this mode you must sync to a primary base first.



Three horizontal bars ( $\Xi$ ) indicate Active Sync Secondary base has either failed to register to a Primary, or that an Active Sync Secondary base has lost synchronization to the Primary. It takes a few seconds for the secondary to recognize that the primary is not available and revert to a primary state. **However, you can register belt packs under this condition**.



The number "i" indicates the quadrant the secondary has been placed in.



The number "2" indicates the quadrant the secondary has been placed in.



The number "3" indicates the quadrant the secondary has been placed in.



The "P" indicates the Secondary base has successfully synchronized to a Primary base in Passive Sync.



The "f" symbol indicates that a second Passive Sync attempt has failed and is now set to normal Primary.



Displayed for 0.5 seconds to indicate radio has started.



The lower case "c" will appear when the registry on the base station is cleared. To clear the registry power down the base.



The lower case "a" will appear when the **REG** or **REGISTER button** is pressed and indicates that the base is ready to register a beltpac.

When registering beltpacs on DX bases that can carry 15 beltpacs please note that the numeric count displayed on the LED will be in hexadecimal. This means that the LED will represent the first 10 beltpacs as 0 to 9. Beltpac 11 will be represented by the letter (A), beltpac 12 will be represented by the letter (B) and on up to beltpac 15 as (E). Please see below.

Beltpac	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Registry	0	1	2	3	4	5	6	7	8	9	Α	В	C	D	Е



The letter "F" will appear when the base registry is at its maximum of 15 registered beltpacs. You will need to clear the registry to add a beltpac. See <u>Clear All Registration</u>, pg. 15.

# **SECTION 5. MULTIPLE BASE STATIONS**

#### **Base Switch**

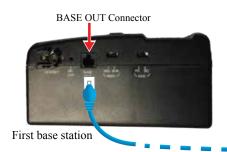
PRI (Primary) or SEC (Secondary) base selection.



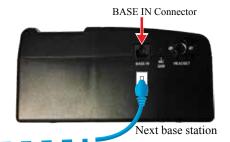
Right side of base station

#### **Audio Connection**

Connect base stations with the provided interconnect cable, from the BASE OUT connector on one to the BASE IN connector on the other.



Interconnect Cable

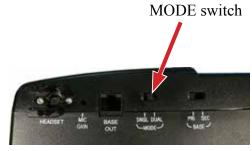


## Single/Dual Channel Setting

In the single-channel (SNGL) mode — four beltpacs can be used in the hands-free mode, communicating in "O" channel only.

In the dual-channel (DUAL) mode — three beltpacs can be used in the hands-free mode, communicating in either "O" or "X" channel, or "ALL" (both channels).

On the right side of the base station(s), set the MODE switch to the single or dual-channel position.



Right side of base station

### **Base Station Microphone Gain Adjustment**

The microphone gain adjustment allows you to adjust the level of your voice as it is transmitted from the headsets plugged into the base station Microphone gain must be adjusted for each base station headset.

- 1 Using a headset plugged into the right side of a base station, locate the recessed MIC GAIN adjustment hole on the right side of the base station.
- Insert a small screwdriver in the hole, and turn the adjustment clockwise (to increase) or counterclockwise (to decrease) microphone gain.
- 3 Speak into the right headset microphone and listen to your voice level (sidetone) as you adjust the microphone gain.
- 4 Using a headset plugged into the left side of the base station, locate the MIC GAIN adjustment on the left side of the base station, and then repeat Steps 2 and 3.
- 5 Repeat Steps 1 through 4 for each base station.

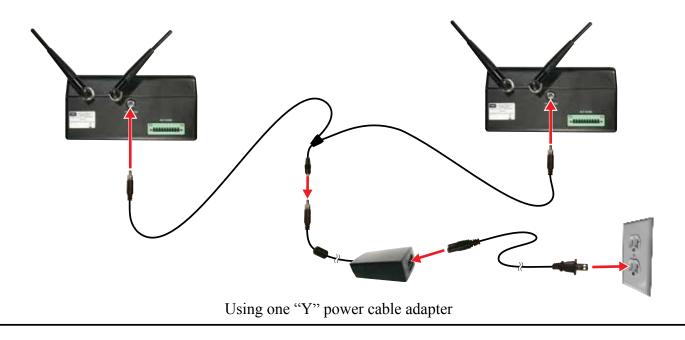


Base station microphone gain adjustment

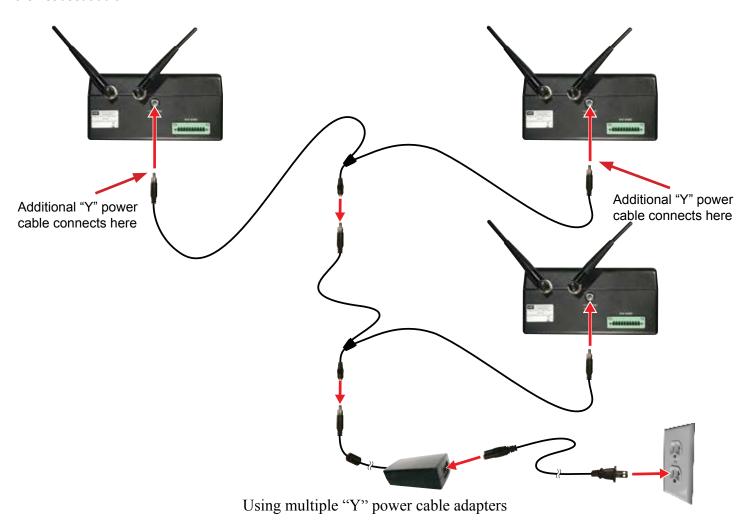
**NOTE:** Base station microphone gain is factory set at about onethird from minimum level.

# **Multiple Base Station Connection**

Use a "Y" power cable to connect and power each base station.



If you're connecting more than two base stations, be certain to add another "Y" cable for each additional base station, rather than more than one power supply. Using more than one power supply can add background noise (or humming) to the headset audio.



## **SECTION 6. REGISTRATION**

# **BELTPACS**

- 1 Turn the base station power on, and the beltpac power off.
- 2 Plug the headset into the beltpac, and put the headset on your head.
- **3** Press the **REGISTER button** on the base station registration panel. A lower case "a" will appear on the STATUS window.
- 4 Press and hold the **ALL button** on the beltpac as you press and release its **PWR** (power) **button**. After a brief delay, you should hear "Registration complete". An ID number for the beltpac will appear briefly on the STATUS window.
- 5 Repeat Steps 1 through 4 for each beltpac.





**NOTE:** If registration is not successful, you will hear "Registration failed" and the STATUS window will be blank. If this happens, refer to **TROUBLESHOOTING** in Section 8, page 26.

#### NOTE:

If you're attempting to register more than 15 beltpacs to a base station:

- An "F" (Full) will appear in the STATUS window, and you will hear "Registration failed" in the headset.
- Clear all current registrations. Refer to Clear All Registrations on page 15 to clear all registrations.
- Register all beltpacs, one at a time, including previously registered beltpacs.

# **Beltpac Operating Mode Setup**

Set up beltpacs to operate in the desired mode by pressing and holding the button combinations shown below. Button combinations work in unison with the **PWR** (power) **button**.

Mode	Button Combination	Button Functions						
Head Coach (default)	Hold X + O + ALL and press <b>PWR</b>	X, O & ALL have normal functions						
NOTE: Beltpacs are shipped in the Head Coach mode.								
Offense only	Hold O and press <b>PWR</b>	X & O work as O ALL has no function						
Offense + ALL	Hold O + ALL and press <b>PWR</b>	X & O work as O ALL has normal function						
Defense only	Hold X and press <b>PWR</b>	X & O work as X ALL has no function						
Defense + ALL	Hold X + ALL and press <b>PWR</b>	X & O work as X ALL has normal function						
Offense + Defense only	Hold X + O and press <b>PWR</b>	X & O have normal functions ALL has no function						
Latching (Hands-Free, Full-Duplex)	Hold ALL + ▲ and press <b>PWR</b>	X & O will latch on when pressed and released, for a normal two-way conversation						
Push-To-Talk (PTT)	Hold ALL + ▼ and press <b>PWR</b>	X, O & ALL must be pressed and held while you talk, and released to listen						

**NOTE:** Mode settings will be stored to memory, so your beltpacs will have the same mode settings each time you power them off and on.

NOTE: ALL does not latch on, and must be held down to hear both O and X.

### **Beltpac Adjustments**

#### **Sidetone Adjustment**

When you speak into the microphone, you can hear sidetone (your own voice) in the beltpac headset.

Sidetone can be adjusted as follows:

- 1 Be sure the beltpac power is on.
- While holding down the **O button**, press the volume-up ▲ or volume-down **▼ button** as many times as needed to reach an acceptable level. If you reach the high limit, you will hear "maximum" in the headset. If you reach the low limit, you will hear "zero".

Maximum sidetone level is recommended.

#### Microphone Gain Adjustment

Some users speak louder or softer than average.

The microphone gain adjustment helps to compensate for extremes in speaking level of coaches using beltpacs.

**NOTE:** The microphone gain can be monitored through sidetone, at the base station or preferably by someone else using a beltpac.

- **1** Be sure the beltpac power is turned on.
- While holding down the **X button**, press the volume-up ▲ or volume-down ▼ **button** as many times as needed to reach an acceptable level. If you reach the high limit, you will hear "maximum" in the headset. If you reach the low limit, you will hear "zero".

Recommended microphone gain levels are:

• Beltpacs – 12 presses down from maximum.

**NOTE:** Microphone gain and sidetone adjustments will be saved in memory. A reset is not required when the unit is turned off and on.

# **SECTION 7. EQUIPMENT OPERATION**

# THE BASICS

#### IN THE PRESS BOX

### **Base Station Operation**



- 1 Press base station **POWER** button to turn on power.
- 2 Place the left or right headset on your head, then use the left or right base station headset controls to adjust.
- 3 Adjust the headset volume as needed.

**CAUTION:** Having your headset at a high volume level for a long time can cause hearing damage.

- 4 Press the channel **SELECT button**; a Green light appears above **O**, **ALL** or **X** selection Press the **SELECT button** again to change selection.
- To talk to coaches, press and release **TALK button** the Green light turns red. Talk and listen to coaches as you would in normal telephone conversation. Press and release **TALK button** again when you finish talking. (You will still hear the other coaches, but they will not hear you.)
- 6 To turn base station off, press and hold **POWER button** until the lights turn off.

#### ON THE FIELD

# **Beltpac**

- 1 Be certain a fully charged battery is in the unit.
- Plug the headset into beltpac, and place the headset on your head. Slide beltpac into its pouch, and clip it on your belt.
- 3 Press and release the PWR (power) button to turn the unit on.



Beltpac power button

4 Press and release the **O button** to communicate with offense coaches, or press the **X button** to communicate with defense coaches.



Speak to Offensive coaches



Speak to Defensive coaches

5 To communicate with both offense and defense coaches, press and hold the ALL button while talking.



Speak to all coaches

6 Adjust the beltpac or headset volume as needed.



Increase volume



Decrease volume

**CAUTION:** Having your headset at a high volume level for a long time can cause hearing damage.

7 To turn the unit off, press and hold the power button for about two seconds until you hear "Power off".

# **Changing Batteries**

Beltpac batteries typically provide 20 hours of continuous use in listen mode.

If you hear "Change battery" in your headset:

- 1 Remove the beltpac it from its pouch.
- 2 Slide the battery release latch in direction of the arrow.
- **3** Lift the battery out of beltpac.
- 4 Place the battery in the battery charger port for recharging.
- 5 Install a fully charged battery in the beltpac.
- 6 Place the beltpac back into its pouch.



# OPTIONAL AUXILIARY EQUIPMENT CONNECTION

Auxiliary equipment such as audio/video recorder or a hardwired intercom can be connected to the rear panel of the base station.

1 Connect the wires from your auxiliary audio equipment to the enclosed 10-pin connector in accordance the table below.

Pin	Connections	
1	Aux In - O	Differential pair
2	Aux In – O	Differential pair
3	Aux Out - O	Differential pair
4	Aux Out - O	Dillerential pail
5	Ground	
6	No Connection	
7	Aux In – X	Differential pair
8	Aux In – X	Differential pair
9	Aux Out - X	Differential pair
10	Aux Out - X	Dillerential pall



- 2 Plug the connector into the back panel of the base station as shown above.
- 3 By inserting a small screwdriver in the holes on the front panel of the base station, you can adjust the IN and OUT sound level of "O" and "X" communication channels as needed.



# OPTIONAL REMOTE ANTENNA INSTALLATION

It may be necessary to place the antennas away from the base station if it is not possible to avoid obstructions between it and the sideline, or if the press box has windows that are coated with a metalized sun reflecting film. Either of these situations may block signals from the press box base station to the beltpacs on the field.

Remote antenna kits with either 6 foot (1.83 meter) or 30 foot (9.14 meter) cables can be used to mount the antennas wherever necessary to alleviate this problem.

To order a remote antenna kit, refer to the optional equipment shown on <u>page 3</u>. Installation instructions are enclosed with the remote antenna kit

### **SECTION 8. TROUBLESHOOTING**

If you are unable to correct any of the problems described below or if your problem is not covered, call 1-800-909-6604 for assistance.

#### 1 Power light on base station does not come on when power button is pressed.

- Be sure the power supply is properly connected to the base station, and the power cord is properly connected to the power supply and electrical outlet.
- If operating on battery power, be sure the battery is charged and in the battery compartment with the cover is securely closed.

#### 2 Beltpac power lights do not turn green and you hear "out of range".

- Be sure the base station power is on.
- Turn beltpac power off and on.
- Beltpac may be too far from the base station.

#### 3 When trying to register a beltpac, you hear "registration failed".

- First, make attempts to register again using the Beltpac Registration process detailed on page 19.
- If subsequent attempts fail, press the **RESET button** on the base station with the point of a pen.

Wait for the base to be ready, a Primary base STATUS window will become blank, while a Secondary base STATUS window will show 1, 2, 3 pr P.

Try again to register the beltpac.

If registration fails again, call your dealer for assistance.

#### 4 Other coaches cannot hear me when I talk.

- Be sure you are pressing the X or O button on the beltpac or the TALK button on the base station.
- Be sure you are pressing the button for the correct channel.
- Be sure the headset plug is properly connected to the beltpac or base station.

# 5 With more than one base station, offensive spotter can not hear O or ALL transmission from another base, or defensive spotter can not hear X or ALL transmission from another base.

- Be sure interface cable is properly connected from BASE OUT on one base station to BASE IN on the next base station.
- If problem is not resolved, try using a different interface cable.

#### 6 No or low auxiliary audio sound.

- Check wiring from auxiliary equipment to AUX AUDIO connector on back of the base station.
- Turn AUX AUDIO adjustments on front of base station with a small standard (flat) screw driver, clockwise to increase level and counterclockwise to decrease level.

#### 7 Coaches using beltpacs cannot hear or talk to coaches using base station headsets.

- Be sure base station headsets are fully plugged into the base station headset connectors.
- Be sure the appropriate SELECT lights are red (O, X or ALL) when coaches at base station are talking.
- Be sure coaches are talking or listening on the right channel (O, X or ALL).

#### 8 Beltpac range is bad.

- Be sure antennas are properly connected and tightened on base station.
- Be sure base station is positioned where there are no physical obstructions blocking line-of-sight from the base station to your sideline.

#### 9 Beeping is heard in base station headset and SELECT lights are blinking.

• Base station is operating on battery power, and the battery is low.

#### 10 Not all beltpac buttons are working.

• Button functions may have been changed to work in the desired operating mode (see page 20).

#### 11 There is interference from a cordless telephone.

- If there is a 2400MHz cordless telephone nearby, interference may occur.
- If it does occur, changing frequencies on the telephone should eliminate the problem.
- If it does not, move the phone as far as possible from the base station, or use another type phone.

#### (If your base station does not have a battery backup)

In the event of an electrical power outage, such as from lightning or a power generator failure, if you experience problems with your DX340|HD equipment after the power comes on again, unplug the AC power supply from its electrical outlet and wait 15 seconds, then plug it back in.

# FREQUENTLY ASKED QUESTIONS

1 Are the battery charger and base station power supplies interchangeable?

Yes.

- What is the maximum recommended number of base stations that can be linked with interconnect cables?
  Four.
- 3 Can I use more than three beltpacs on a single base station in dual channel mode?

Yes, but only three users will be able to transmit at the same time. Up to 15 beltpacs can be registered to a single base station. Beltpacs should be placed in press-to-talk mode when more than three beltpacs are used.

4 What should I do if my carrying case and equipment get wet?

Dry them out thoroughly before further use. Be sure all equipment is dry before using it again.

**CAUTION:** Plugging wet electrical equipment into an AC power outlet is dangerous!

### **SECTION 9. TECHNICAL DATA**

# **EQUIPMENT SPECIFICATIONS**

#### **Base Station**

**GENERAL** 

**Frequency Range:** . . . . . . . . . . . All, 2400 – 2483.5 MHz

Low, 2401.92 to 2439.94 MHz High, 2443.39 to 2481.41 MHz

Power Requirements: . . . . . . . . . 100-240VAC, 50-60Hz

12-14VDC or six AA batteries (NiMH optional)

**Temperature Range:** . . . . . . . . . . . 32-122°F (0-50°C)

**Weight:** . . . . . . . . . . . 2.75 lb with battery (1.25 kg)

one time (in single channel mode)

**8-Wire I/O:** ..... RJ45,  $600\Omega$  balanced out, high impedance in

Headset Connectors: ..... 4-pin mini-DIN

Electret microphone: . . . . . . . . 45 KΩ

**Headset Output:** . . . . . . . . . . . 200mW into 32Ω **Top Panel Controls & Indicators:** . . Power button

Left and Right headset controls

Rotary knobs for headset volume (VOL) adjustment

Headset SELECT buttons (O=Offense, X=Defense or ALL)

Headset TALK buttons

Registration controls

CLEAR/BAND button
REGISTER button
RESET switch (recessed)

STATUS indicator

Headset transmit dual-color LEDs, left and right (red/green) - O, X, ALL

RECEIVE LEDs (green) - O, X, ALL

Front Panel: . . . . . . . . . . . Auxiliary input and output level adjustments

Left Panel: ..... 8-wire audio port

Microphone gain adjustment Left headset connector Right headset connector

Right Panel: . . . . . . . Right headset connector

Microphone gain adjustment

8-wire audio port

Single/Dual selection switch

Primary/Secondary selection switch (Disabled in this version)

Rear Panel: . . . . . . . . . . Auxiliary input and output connectors

Antenna connectors

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, TDMA

Harmonics/Spurious: ..... Exceeds FCC and ETSI specifications over temperature

#### **RECEIVER**

**Type:** . . . . . Frequency hopping, spread spectrum

RF Sensitivity: ..... <-90dBm w 10-3 BER

### **Beltpac**

Antenna: . . . . . . . . . . . Internal, horizontal/vertical diversity

Frequency Response: . . . . . . . 200 Hz to 7 kHz Transmit Power: . . . . . . . . 100mW burst

RF Sensitivity: ..... <-90dBm w 10-3 BER

PTT – up to 20 hours

Weight: ..... 7.4 oz (.21 kg) with battery and pouch

Headset Connector: . . . . . . . 4-pin, mini-DIN

Microphone: . . . . . . . . . . Electret

Headset Output: . . . . . . . . . . . . . . . . 160mW into  $32\Omega$ 

Controls: . . . . . . . . . Power PWR, Volume-up ▲, Volume-down ▼, O, X, ALL

Indicators: ..... Dual-color LED (red/green)

<sup>\*</sup> Beltpacs will follow the frequency range determined by the setting on the Base Station (e.g. All, Low or High).

# SECTION 10. SECTION INDEX

Equipment	
Basic 5-coach layout	1
Extended 10-coach layout	1
Standard Equipment	2
Optional Equipment	3
Base Station	
Features	
Battery charger setup	
Setup (single base station)	
Setup for battery operation	
Wi-Fi Interference Avoidance	
Adaptive Frequency Hopping	
Multi-Base Interference Avoidance	
Audio connection	
Microphone gain adjustment	
Multiple Base Station Connection	
Operation	
Specifications	
Beltpac	
Features	6
Microphone gain adjustment	. 17
Side tone adjustment	. 17
Registration	. 18
Operating mode setup	
Operation	
Changing batteries	
Specifications	. 29
Optional equipment installation	
Auxiliary equipment connection	. 25
Remote antennas	
Troubleshooting	
Frequently Asked Questions	

### **SECTION 11. REGULATORY INFORMATION**

# General battery safety instructions for battery model BAT41, BAT50, BAT60 - English

BAT50 is specifically designed only for use with product(s) offered by:

HM Electronics Inc. (HME)

Clear-Com LLC, an HME Company

#### **SAFETY PRECAUTIONS**

To ensure the safety and reliability of your Battery, follow the guidelines in this section.

#### **Using the Battery**



#### **WARNING!**

#### Do Not Abuse/Modify Battery Packs

Lithium-ion cells and battery packs may get hot, explode or ignite and cause serious injury if modified or abused.

#### Follow the safety instructions below:

- Do not place the battery in fire or heat the battery.
- Do not connect the battery backward, so the polarity is reversed.
- Do not connect the positive terminal and negative terminal of the battery to each other with any metal object (such as a wire).
- Do not carry or store the battery together with necklaces, hairpins or other metal objects.
- Do not pierce the battery with nails, strike the battery with a hammer, step on the battery or otherwise subject it to strong impacts to shocks.
- Do not solder directly onto the battery.
- Do not expose the battery to water or salt water, or allow the battery to get wet.
- Do not disassemble or modify the battery. The battery contains safety and protection devices which, if damaged, may cause the battery to generate heat, explode or ignite.
- The protection circuit module provided with battery packs is not to be used as a substitute for a shutoff switch.
- Do not place the battery in or near fire, on stoves or in other high temperature locations.
- Do not place the battery in direct sunlight, or use or store the battery in cars in hot weather. Doing so may cause the battery to generate heat, explode or ignite. Using the battery in this manner may also result in a loss of performance or shortened life expectancy.
- When the battery is worn out, insulate the terminals with adhesive tape or a similar nonconducting material before disposal.

- Immediately discontinue use of the battery if, while using, charging, or storing the battery, the battery emits an unusual smell, feels hot, changes color or shape or appears abnormal in any other way.
- Do not place the battery in microwave ovens, high-pressure containers or on induction cookware.



#### **WARNING!**

In the event the battery leaks and the fluid gets into one's eye, do not rub the eye. Rinse well with water and immediately seek medical care. If left untreated, the battery fluid could cause damage to the eye.



#### **WARNING!**

If the device causes abnormal current to flow, it may cause the battery to become hot, explode, or ignite causing serious injury.

#### **Charger Types**

Your battery must only be charged with a HME/Clear-Com recommended charger. Any attempt to use other types of chargers may cause an explosive reaction, fire or chemical burns. Do not assume that the physical form of another battery qualifies the charger for use with the HME/Clear-Com 104G041LF battery.

#### **Charging the Battery**

Be sure to follow the warnings listed below while charging the battery. Failure to do so may cause the battery to become hot, explode or ignite and cause serious injury.

- Do not continue charging the battery if it does not recharge as specified HME/Clear-Com User Guide, under charging instructions.
- Do not attach the battery to an external charger, power supply plug or directly to a car's cigarette lighter.

#### Recycling the Battery

If your business or household does not have a battery recycling program, go to the following URL or copy and paste the following URL into your browser, then enter your zip code for a list of recycling centers: http://earth911.com

# Directives de sécurité générales pour les modèles de batterie suivants : BAT41, BAT50, BAT60 - French

Les batteries BATXX sont spécialement conçues de manière à ne pouvoir être utilisées qu'avec les produits offerts par

HM Electronics Inc. (HME), Clear-Com LLC, une société HME

#### **PRÉCAUTIONS**

En vue d'assurer la sûreté et la fiabilité de votre batterie, respectez les directives indiquées dans cette section.

#### Utilisation de la batterie



#### **ATTENTION!**

# Ne pas faire un usage abusif des blocs-piles ni les modifier

Les cellules de lithium-ion et les blocs-piles peuvent devenir chauds, exploser ou prendre feu et ainsi causer des blessures graves si on en fait un usage abusif ou qu'on les modifie.

#### Respectez les directives de sécurité ci-dessous :

- Ne pas placer la batterie dans le feu ni la faire chauffer.
- Ne pas brancher la batterie à l'envers de manière à ce que la polarité soit inversée.
- Ne pas connecter la borne positive et la borne négative de la batterie l'une à l'autre avec un objet de métal (comme du fil de fer).
- Ne pas transporter ni entreposer la batterie avec des colliers, des épingles à cheveux et d'autres objets de métal.
- Ne pas percer la batterie avec des clous, la frapper avec un marteau, marcher dessus et la soumettre de quelque autre manière que ce soit à des impacts puissants.
- Ne pas faire de soudure directement sur la batterie.
- Ne pas exposer la batterie à l'eau ou à l'eau salée ni à une grande humidité, et ne pas la laisser être mouillé.
- Ne pas démonter ni modifier la batterie. La batterie contient des dispositifs de sécurité et de protection qui, en cas de dommages, pourraient l'amener à chauffer, à exploser ou à prendre feu.
- Ne pas utiliser le module de circuit de protection offert avec les blocs-piles en remplacement d'un contacteur d'isolement.
- Ne pas mettre la batterie dans ou à proximité du feu, sur des cuisinières ou dans d'autres endroits à température élevée.
- Ne pas placer la batterie directement au soleil ni l'utiliser ou l'entreposer dans des voitures par temps chaud. Ceci pourrait l'amener à chauffer, à exploser ou à prendre feu. D'utiliser la batterie de cette manière peut également la rendre moins performante et diminuer son espérance de vie.
- Quand la batterie est usée, isoler les bornes à l'aide de ruban adhésif ou d'un matériau non conducteur semblable avant de la jeter.
- Cesser immédiatement l'utilisation de la batterie si, en cours d'utilisation ou de chargement ou lorsqu'elle est entreposée, elle émet une odeur inhabituelle, dégage de la chaleur, change de couleur ou de forme ou semble anormale de quelque autre manière que ce soit.

- Ne pas mettre la batterie dans des fours à micro-ondes, des contenants à haute pression ou des ustensiles de cuisine à induction.
- Garder les batteries hors de la portée des enfants.
- Toujours débrancher la batterie avant de l'entreposer ou de la transporter.
- Toujours entreposer la batterie dans un contenant étanche à l'épreuve des flammes loi de toute matière inflammable ou corrosive.



#### **ATTENTION!**

Si la batterie fuit et que le fluide entre en contact avec l'oeil de quelqu'un, ne pas frotter l'oeil. Bien rincer à l'eau et tout de suite demander des soins médicaux. Le fluide de la batterie risque de causer des dommages à l'oeil si celui-ci n'est pas traité.



#### **ATTENTION!**

Si le dispositif cause la circulation d'un courant anormal, il se peut que la batterie chauffe, explose ou prenne feu et cause ainsi des blessures graves.

#### Types de chargeur

Votre batterie ne devrait être rechargée qu'à l'aide d'un chargeur recommandé par HME/Clear-Com. Toute tentative d'utiliser d'autres types de chargeurs risque d'entraîner une réaction explosive, un feu ou des brûlures chimiques. Ne pas présumer que la forme physique d'une autre batterie fait que le chargeur y correspondant peut être utilisé avec la batterie HME/Clear-Com.

#### Chargement de la batterie

S'assurer de suivre les avertissements indiqués ci-dessous au moment de charger la batterie. La batterie pourrait sinon chauffer, exploser ou prendre feu et ainsi causer des blessures graves.

- Ne pas continuer à charger la batterie si elle ne se recharge pas de la manière indiquée dans le guide de l'utilisateur HME/Clear-Com, dans la section des directives de chargement.
- Ne pas brancher la batterie à un chargeur externe, à une prise d'alimentation ou directement dans l'allume-cigare d'une voiture.
- Toujours procéder à l'inspection visuelle de la batterie avant ou après son chargement.
- Toujours laisser la batterie refroidir à une température ambiante sécuritaire avant de la charger au terme de son cycle de décharge précédent.
- Ne pas recharger la batterie sur ou à proximité de matériaux inflammables; ceci fera en sorte qu'en cas de mauvais fonctionnement, elle puisse être contenue en causant le moins de dommages et de blessures possible.

#### Recyclage de la batterie

Quand la batterie atteint la fin de sa vie utile, il devrait revenir à une entreprise de recyclage qualifiée ou à une entreprise de gestion des matériaux dangereux de s'en débarrasser. Ne pas mélanger cette batterie au courant de déchets solides.

Si votre entreprise ou votre foyer ne participe à aucun programme de recyclage des batteries, cliquez sur l'adresse URL suivante ou collez-la dans votre navigateur, puis entrez votre code postal en vue d'obtenir une liste de centres de

recyclage: http://earth911.com

# Instrucciones generales de seguridad para baterías para cada modelo de batería: BAT41, BAT50, BAT60 - Spanish

Las baterías BATXX están diseñadas específicamente para usarse solo con el(los) producto(s) que ofrezca:

HM Electronics Inc. (HME)

Clear-Com LLC, una compañía de HME

#### PRECAUCIONES DE SEGURIDAD

Para garantizar la seguridad y la fiabilidad de su batería, siga las directrices en esta sección.

#### Al usar la batería



#### ¡ADVERTENCIA!

No dañe ni modifique los empaques de las baterías Si las celdas de iones de litio y los empaques de las baterías se modifican o dañan, pueden recalentarse, explotar o incendiarse y causar heridas graves.

# Siga las instrucciones de seguridad que se indican a continuación:

- No exponga la batería al fuego ni la caliente.
- No conecte la batería al revés, de modo que la polaridad estuviera invertida.
- No conecte la terminal positiva con la negativa usando objetos metálicos (como un alambre).
- No almacene ni lleve las baterías junto con collares, horquillas u otros objetos metálicos.
- No perfore con clavos, golpee con martillo ni pise la batería, ni la someta de manera alguna a golpes fuertes.
- No suelde directamente sobre la batería.
- No exponga la batería al agua, sea dulce o salada, ni a la humedad alta, ni permita que se humedezca o se moje la batería.
- No desarme ni modifique la batería. La batería contiene dispositivos de seguridad y de protección que, si se dañan, pueden causar que la batería genere calor, explote o se incendie.
- El módulo de circuito de protección incluido en los empaques de las baterías no debe usarse como sustituto de un interruptor de apagado.
- No exponga la batería al fuego ni cerca de este, en estufas ni en lugares de altas temperaturas.
- No exponga la batería bajo la luz solar directa ni use o almacene la batería en un carro en climas calientes.
   Hacer lo anterior, podría generar que la batería genere calor, explote o se incendie. Asimismo, usar la batería de esta manera podría resultar en una pérdida de rendimiento o disminución de la expectativa de vida útil del equipo.
- Cuando la batería se desgaste, aísle las terminales con cinta adhesiva u otro material similar que no sea conductor, antes de deshacerse de ella.
- Deje de utilizar inmediatamente la batería si, mientras la usa, carga o almacena, esta emite un olor inusual, se siente caliente, cambia de color o forma o parece anormal de cualquier otra manera.

- No coloque la batería en hornos microondas, contenedores de alta presión ni en materiales de cocina inducida.
- Mantenga las baterías fuera del alcance de los niños.
- Desconecte siempre la batería antes de almacenarla o transportarla.
- Almacénela siempre en contenedores estrictamente resistentes al fuego lejos de materiales inflamables o corrosivos.



#### ¡ADVERTENCIA!

En caso de que la batería gotee y le entre el fluido en los ojos, no se los restriegue. Enjuague bien con agua y busque asistencia médica inmediatamente. Si no recibe tratamiento, el fluido de la batería podría causarle daño en sus ojos.



#### ¡ADVERTENCIA!

Si el dispositivo causa que fluya corriente anormal, puede causar que la batería se caliente, explote o se incendie y cause heridas graves.

#### Tipos de cargador

Su batería debe cargarla únicamente con un cargador recomendado por HME/Clear-Com. Si intenta usar otro tipo de cargador, puede causar una reacción explosiva, incendio o quemaduras con sustancias químicas. No asuma que la forma física de otra batería permita que el cargador de esta puede usarse con la batería de HME/Clear-Com.

#### Cargar la batería

Asegúrese de seguir las advertencias que se describen más abajo mientras carga su batería. Si no lo hace, puede causar que la batería se caliente, explote o se incendie y cause heridas graves.

- No siga cargando la batería, si no se recarga como se especifica en la guía para el usuario de HME/Clear-Com, según las instrucciones de carga.
- No conecte la batería a un cargador externo, conector de energía ni directamente al encendedor de cigarrillos de un carro.
- Inspeccione siempre visualmente su batería antes y después de cargarla.
- Deje siempre que su batería se enfríe hasta que esté en su temperatura ambiental segura antes de cargar, después de su ciclo anterior de descarga.
- No cargue las baterías sobre ningún tipo de material inflamable. Esto asegurará que, si hay una falla de funcionamiento, se pueda contener con la menor cantidad posible de daños y heridas.

#### Reciclar la batería

Cuando la batería llegue al fin de su vida útil, un reciclador calificado o una persona encargada de manipular materiales peligrosos deberían encargarse de desecharla. No mezcle esta batería con el flujo de residuos sólidos.

Si su negocio u hogar no tiene un programa de reciclaje de baterías, vaya a la siguiente dirección URL o pegue la siguiente dirección en su navegador y, luego, introduzca su código postal para obtener una lista de los centros de reciclaje: http://earth911.com

#### **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 user's authority to operate this equipment.

# MANDATORY SAFETY INSTRUCTIONS FOR INSTALLERS AND USERS

Use only manufacturer or dealer supplied antennas, power supplies, batteries and battery chargers. 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.

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 7dBi.

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. You may be exposing person or persons to excess radio frequency radiation. You may contact your 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.

**WARNING:** Excessive sound pressure level from earphones or headphones can cause hearing loss. 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 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.

#### Canada IC Notice to Users English/French in accordance with RSS GEN

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avec Industrie Canada RSS standard exempts de licence (s). Son utilization est soumise à Les deux conditions suivantes: (1) cet appareil ne peut pas provoquer d'interférences et (2) cet appareil doit accepter Toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

Hereby, an HM Electronics, Inc, declares that the DX340|HD is in compliance with the essential requirements and other relevant provisions of the RED (Radio Equipment Directive). In AFH mode, complies with European Telecommunications Standards Institute (ETSI) harmonized European standard EN 300 328.



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 (2012/19/EU) 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 Clear-Com 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.



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