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LECTROSONICS DHu-E01-B1C1 Digital Handheld Transmitter User Guide

Contents

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LECTROSONICS DHu-E01-B1C1 Digital Handheld Transmitter

Mechanical Assembly

- A mic capsule is threaded onto the body of the transmitter in the direction shown. Do not overtighten it.
- The lower housing opens by rotating it in the direction shown. After the threads are disengaged, pull the housing downward until it engages the detent that holds it open.
- The threaded interface is a 1.25" diameter opening with 28 threads per inch and three contact rings

Microphone Capsules:

Lectrosonics offers two types of capsules. The HHC is the standard capsule and the HHVMC is the Variable Mic Capsule which includes adjustments for Bass, Midrange and Treble.

HHC Lectrosonics cardioid electret

HHVMC Lectrosonics cardioid electret with VariMic preamp

Along with these two models from Lectrosonics, a variety of different capsules with a common thread and electrical interface are available from the major microphone manufacturers. A list of compatible capsules is on the website at **www.lectrosonics.com** listed on the DHu product page.Do not touch the contacts between the mic capsule and transmitter body. When necessary, the contacts can be cleaned with a cotton swab and alcohol.

Capsule Installation

Capsules are attached with a right-hand thread. To remove the windscreen from the mic capsule, line up the blue wrench (included with the capsule head) with the flat notches on the lower threaded area of the mic capsule.

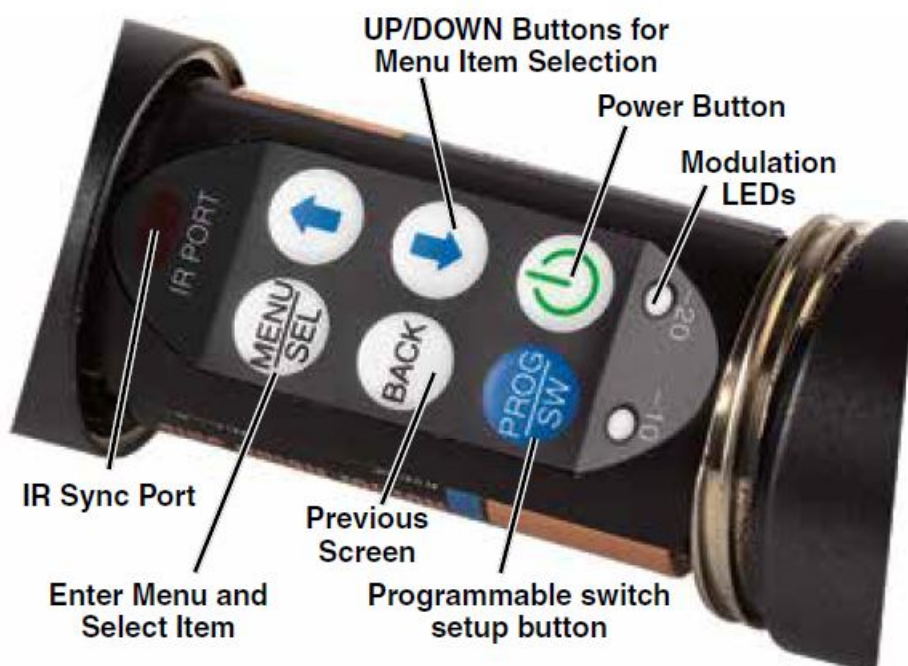Align flats on the wrench with flats on the capsule.

Battery Installation

To insert batteries, close the eject lever and insert the upper contacts first (closest to the mic capsule). Polarity is marked on the label in the bottom of the battery compartment. The contacts are very tight to prevent the batteries from "rattling" as the transmitter is being handled. Pull the eject lever outward to remove the batteries. The battery tips will move outward, making them easier to grasp.

Close eject lever to install batteries

Pull eject lever outward to release batteries from contacts
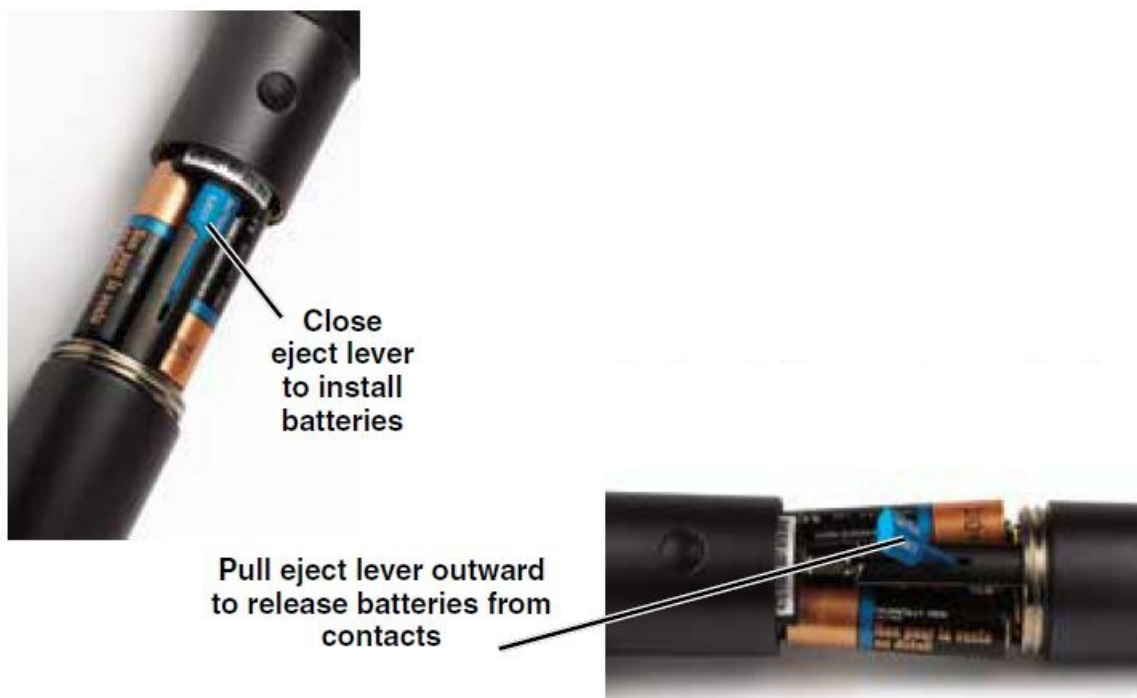
Control Panel

Six membrane switches on the control panel are used to set up the transmit-ter by navigating the menus on the LCD and selecting the desired values.

UP/DOWN Buttons for Menu Item Selection

Power Button

Modulation LEDs

IR Sync Port

Previous Screen

Enter Menu and Select Item

Programmable switch setup button

Setup and Adjustments

Powering On

- Press and hold the Power Button until a status bar on the LCD is completed. The status bar will appear on the LCD, followed by a display of the model, firmware version, frequency band and compatibility mode.
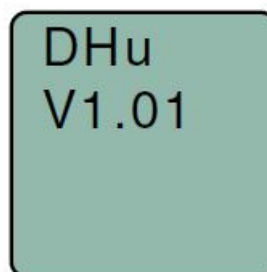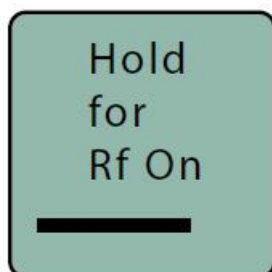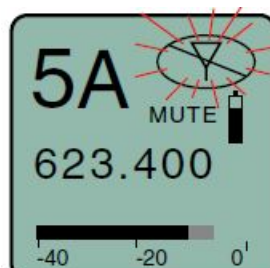
- When you release the button, the unit will be operational with the RF output turned ON and the Main Window displayed.
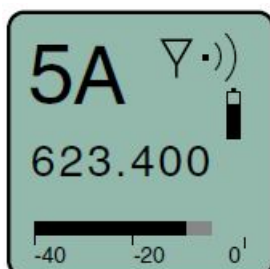

**The Main Window
RF output ON**

- If you release the button before the status bar is complete, the unit will turn on in the Standby mode with the RF output turned OFF and the antenna icon will blink.

**The Main Window
RF output OFF**

Powering Off

- Press and hold the Power Button (or the side button if it is configured for turning the power on and off) while the status bar on the LCD is completed. The power will then be turned off. This can be done from any menu or screen.
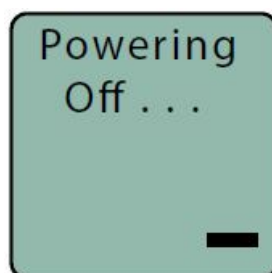
NOTE: If the Power Button is released before the status bar has completed, the unit will remain turned on and the LCD will return to the same screen or menu that was displayed previously.

Standby Mode

A brief push of the keypad Power Button turns the unit on and places it into a "standby" mode (not transmitting). Press the button and release before the status bar completes. This allows the transmitter to be set up without the risk of creating interference for other wireless systems that are operating in the vicinity. A notice will appear briefly confirming that the RF output of the transmitter is turned off, followed by the Main Window. The antenna symbol will blink as a reminder that the RF output is turned off.
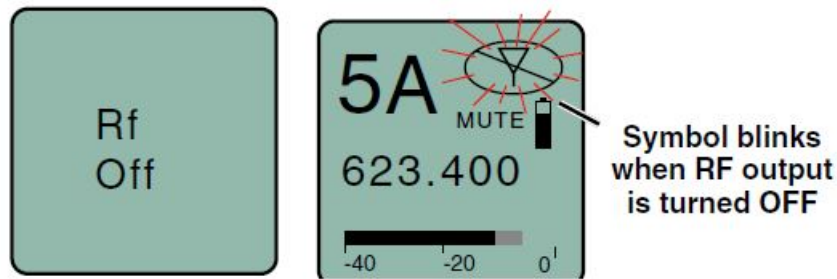
Power Menu
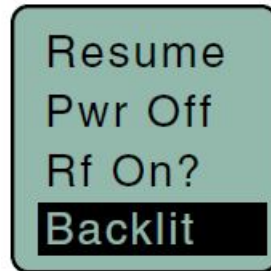
When the transmitter is turned on, a brief push of the Power Button on the keypad will reveal a menu allowing you to choose between Resume, Pwr Off, Rf On?, Backlit and About. Use the UP/DOWN buttons to select one of the menu items, then press the MENU/SEL button to confirm this action.

- Resume: Continue operating in the same condition as before.
- Pwr Off: Turns off the transmitter.
- Rf On?: Begin transmitting the RF signal, enters another screen prompt-ing a Yes or No answer.
- Backlit: The LCD includes a backlight that illuminates the display for easier viewing. It is set to come on when any button on the control panel is pressed, then stay on for 5 seconds, 30 seconds or to stay on all the time.
- About: Displays the model, firmware version, frequency block and com-patibility mode.

The unit can also be turned off from any menu or screen on the LCD by hold-ing the power button in while the status bar on the LCD is completed.

Battery Condition
An icon on the Main Window indicates the approximate remaining power of the batteries. This battery gauge is most accurate with the typical voltage drop across the life of alkaline batteries.
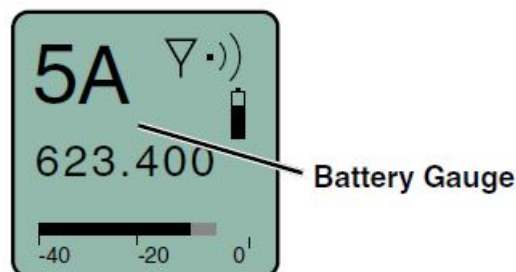
Rechargeable batteries give little or no warning when nearing depletion. If you use rechargeable batteries in the transmitter, we recommend trying fully charged batteries first, noting the length of time that the batteries will run the unit, and in the future using somewhat less than that time to determine when the battery needs to be replaced. The Venue and other receivers from Lectro-sonics offer a timer function to assist in this process.

Navigating Menus and Screens

The Main Window displays the following information:
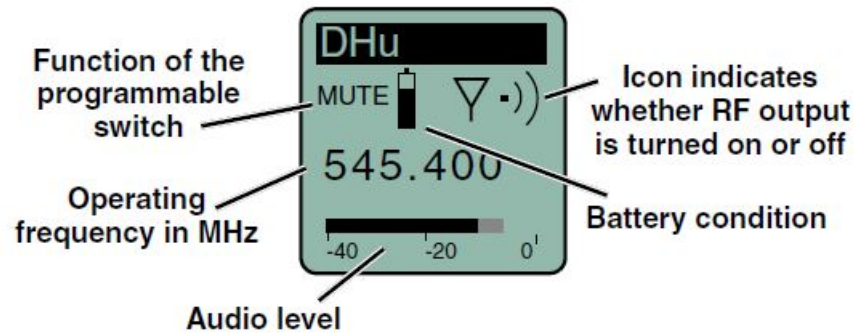
1. Press the MENU/SEL button to enter the setup menu. Use the UP/DOWN buttons to highlight the menu item.
2. Press the MENU/SEL button to enter the setup screen for that item. Use the UP/DOWN buttons to select the desired value or mode.
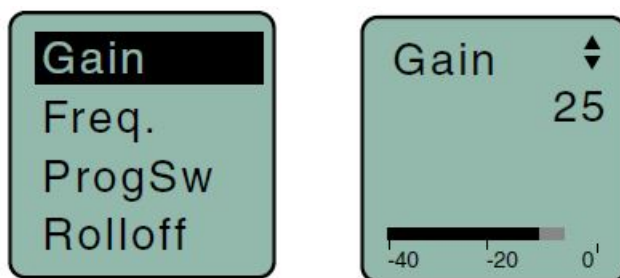
3. Press the MENU/SEL button to save this setting and return to the previ-ous screen.
4. Press the BACK button to return to the Main Window.

Menu Map

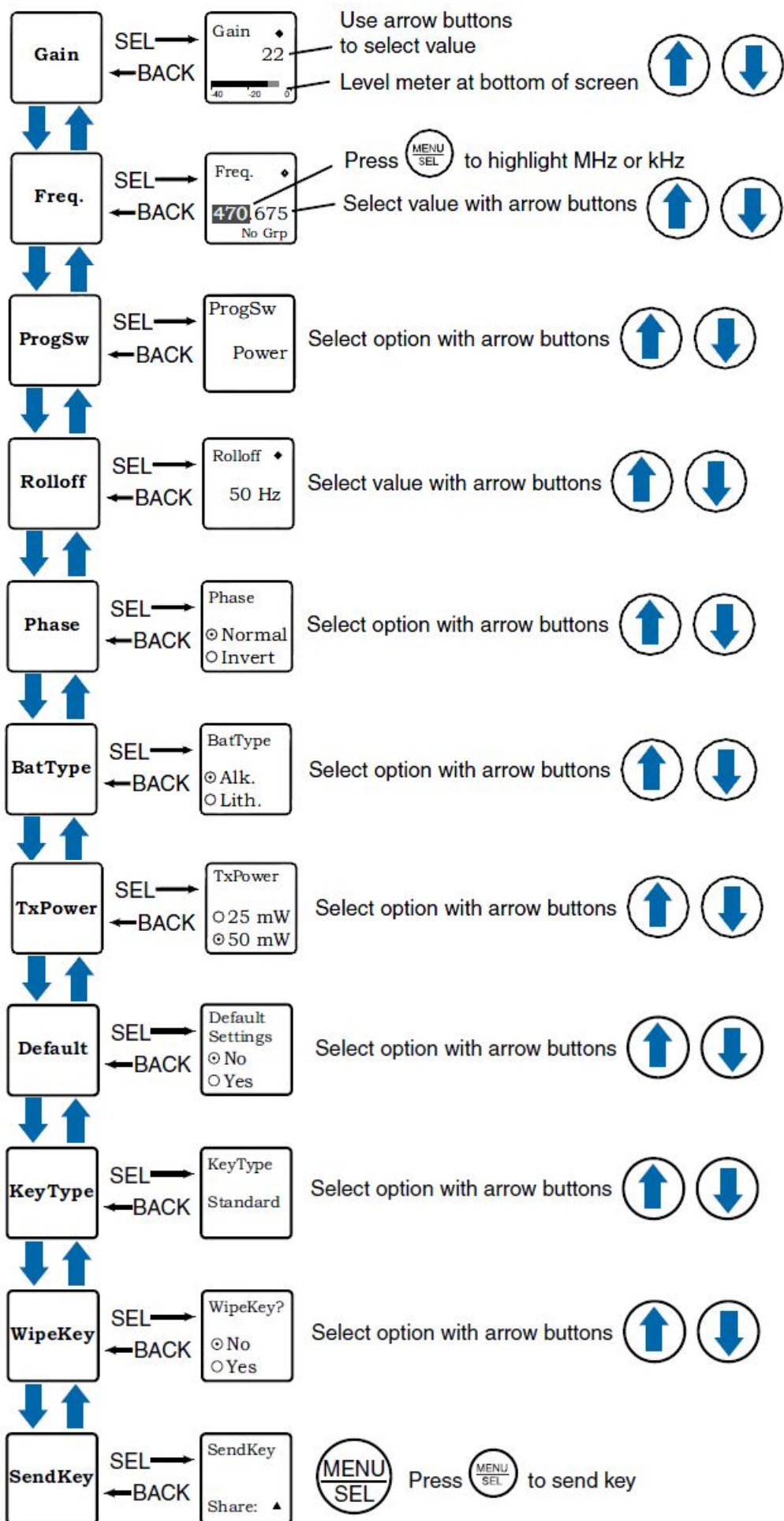| Menu	Action	Screen	Description
Gain	SEL → ← BACK	Gain ◆ 22 / 40 -20 0	Use arrow buttons to select value / Level meter at bottom of screen ⬆ ⬇
Freq.	SEL → ← BACK	Freq. ◆ **470** 675 No Grp	Press (MENU/SEL) to highlight MHz or kHz / Select value with arrow buttons ⬆ ⬇
ProgSw	SEL → ← BACK	ProgSw Power	Select option with arrow buttons ⬆ ⬇
Rolloff	SEL → ← BACK	Rolloff ◆ 50 Hz	Select value with arrow buttons ⬆ ⬇
Phase	SEL → ← BACK	Phase ⊙ Normal ○ Invert	Select option with arrow buttons ⬆ ⬇
BatType	SEL → ← BACK	BatType ⊙ Alk. ○ Lith.	Select option with arrow buttons ⬆ ⬇
TxPower	SEL → ← BACK	TxPower ○ 25 mW ⊙ 50 mW	Select option with arrow buttons ⬆ ⬇
Default	SEL → ← BACK	Default Settings ⊙ No ○ Yes	Select option with arrow buttons ⬆ ⬇
KeyType	SEL → ← BACK	KeyType Standard	Select option with arrow buttons ⬆ ⬇
WipeKey	SEL → ← BACK	WipeKey? ⊙ No ○ Yes	Select option with arrow buttons ⬆ ⬇
SendKey	SEL → ← BACK	SendKey Share: ▲	(MENU SEL) Press (MENU/SEL) to send key

Gain

This setting is very important since it can have a significant effect on the signal to noise ratio the system will deliver. The gain adjustment can even af-fect the operating range of the wireless system. Gain must be set according to the individual voice, the mic capsule in use and the handling technique of the user. LEDs in the control panel facilitate accurate gain adjustment.
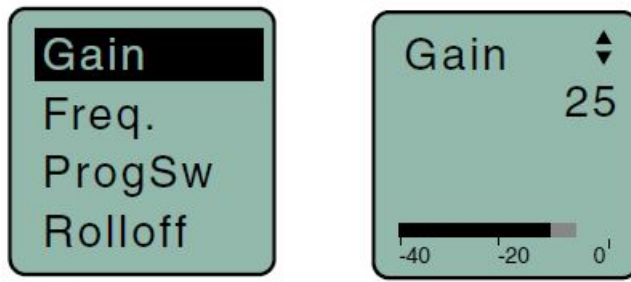
IMPORTANT: See the section Input Gain Adjustment on page 9 for details.
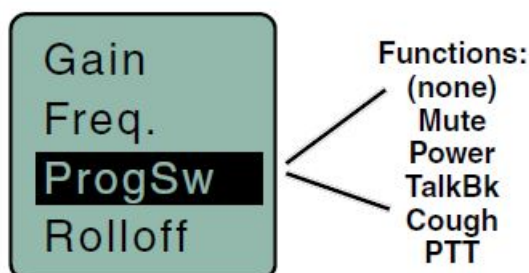
Freq.

The operating frequency is normally determined using the scanning function in the receiver or with coordination software. The frequency is shown on the transmitter LCD display in MHz and with a hexadecimal code that is used on most Lectrosonics receivers. Frequency groups are also able to be received via IR (Inrared) port sync. The group options are set by the receiver, and will show at the bottom of the screen as No Grp, Grp x, Grp w, Grp v, or Grp u. Use the MENU/SEL button to toggle between options and UP and DOWN arrows to adjust.
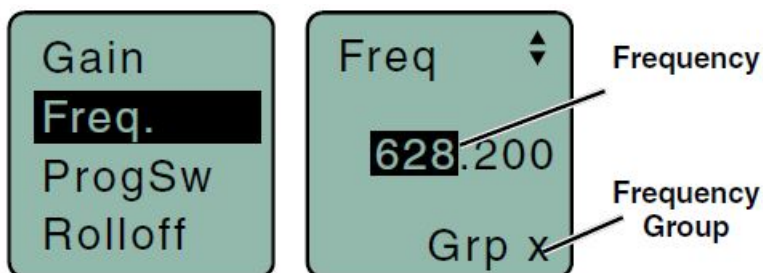
ProgSw

The Programmable Switch on the housing can be set to provide several func-tions, or it can be bypassed.

NOTE: See section on Programmable Switch Functions.
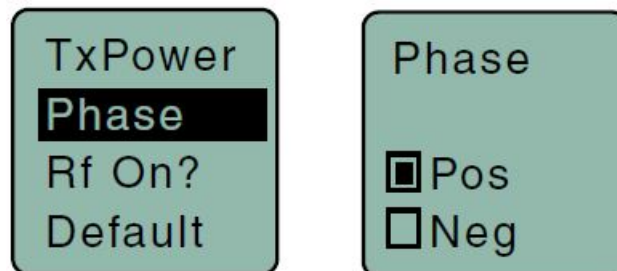
Rolloff

A low frequency roll-off filter can be set for a -3dB point at 25, 35, 50, 70, 100, 120 or 150 Hz. Roll-off slopes are 12.2 dB/octave at 35 Hz and 10.1 dB/oc-tave at 70 Hz through 125 Hz.

```
┌─────────────┐   ┌─────────────┐
│ Gain        │   │ Rolloff  ↕ │
│ Freq.       │   │             │
│ ProgSw      │   │      70 Hz │
│ ▐Rolloff▌   │   │             │
└─────────────┘   └─────────────┘
```

The roll-off frequency is normally adjusted by ear to suit personal preferences.

Phase

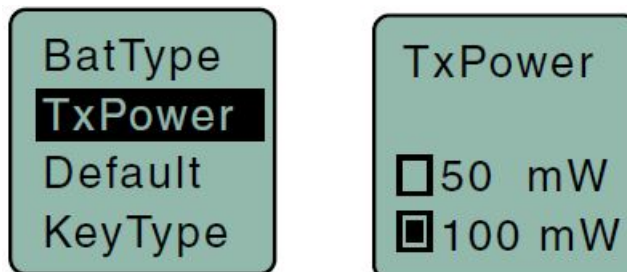The phase (polarity) of the audio can be inverted to match other microphone capsules as needed.

```
┌─────────────┐   ┌─────────────┐
│ TxPower     │   │ Phase       │
│ ▐Phase▌     │   │             │
│ Rf On?      │   │ ◼Pos        │
│ Default     │   │ ☐Neg        │
└─────────────┘   └─────────────┘
```

BatType

Selects the type of batteries being used; alkaline or lithium.

```
┌─────────────┐   ┌─────────────┐
│ Phase       │   │ BatType     │
│ ▐BatType▌   │   │             │
│ TxPower     │   │ ◼Alk.       │
│ Default     │   │ ☐Lith.      │
└─────────────┘   └─────────────┘
```
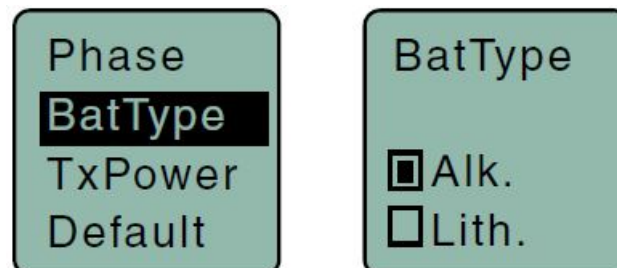
TxPower

Output power can be set to 100 mW to extend operating range (which can also suppress noise and dropouts to some extent) or set to 50 mW to slightly extend the operating life of the batteries.

```
┌─────────────┐   ┌─────────────┐
│ BatType     │   │ TxPower     │
│ ▐TxPower▌   │   │             │
│ Default     │   │ ☐50  mW     │
│ KeyType     │   │ ◼100 mW     │
└─────────────┘   └─────────────┘
```

Default

The default setting simple returns the transmitter back to the factory settings and any of the menu items can be readjusted from that default point.
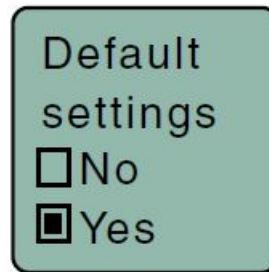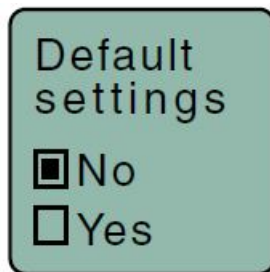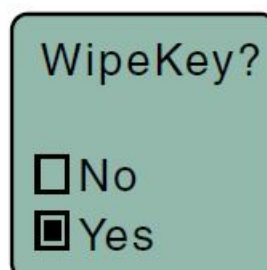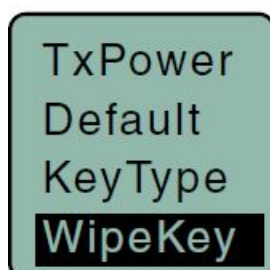
KeyType

The DHu receives an encryption via the IR port from a key generating re-ceiver. Begin by selecting a key type in the receiver and generating a new key (key type is labeled KEY POLICY in the DSQD receiver). Set the matching KEY TYPE in the DHu and transfer the key from the receiver (SYNC KEY) to the DHu via the IR ports. A confirmation message will display on the receiver display if the transfer is successful. The transmitted audio will then be encrypt-ed and can only be listened to if the receiver has the matching encryption key. The DHu has three options for encryption keys:

- Standard: This is the highest level of security. The encryption keys are unique to the receiver and there are only 256 keys available to be trans-ferred to a transmitter. The receiver tracks the number of keys generated and the number of times each key is transferred.
- Shared: There are an unlimited number of shared keys available. Once generated by a receiver and transferred to the DHu, the encryption key is available to be shared (synced) by the DHu with other transmitters/re-ceivers via the IR port. When transmitter is set to this key type, a menu item named SEND KEY is available to transfer the key to another device.
- Universal: This is the most convenient encryption option available. All encryption-capable Lectrosonics transmitters and receivers contain the Universal Key. The key does not have to be generated by a receiver. Sim-ply set the DHu and a Lecrosonics receiver to Universal, and the encryp-tion is in place. This allows for convenient encryption amongst multiple transmitters and receivers, but not as secure as creating a unique key.
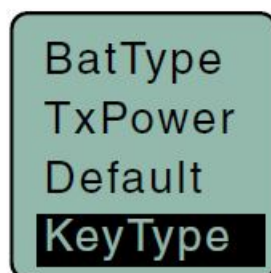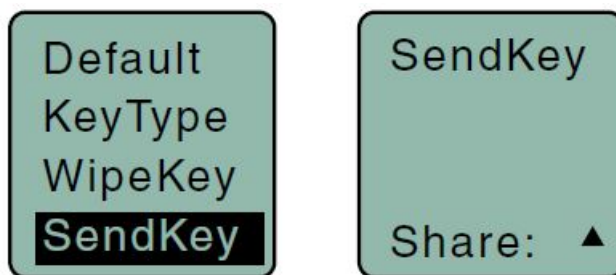

WipeKey

This menu item is only available if Key Type is set to Standard or Shared. Select Yes to wipe the current key and enable the DHu to receive a new key.
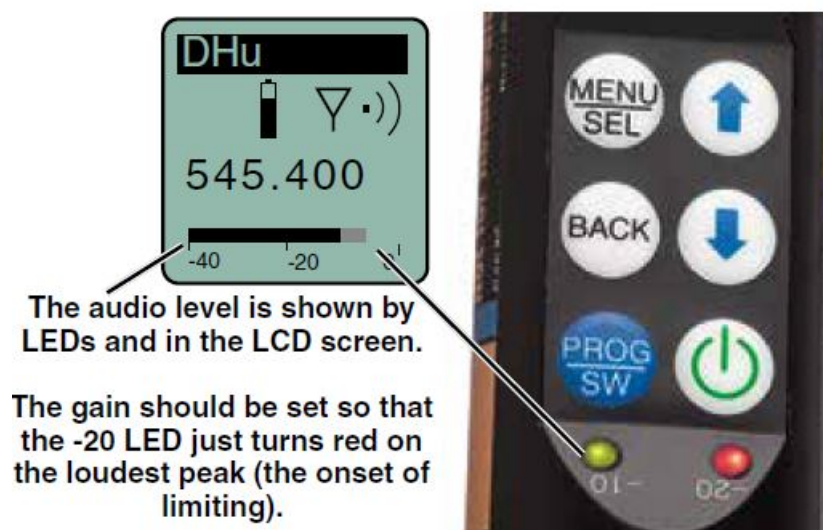

SendKey

This menu item is only available if Key Type is set to Shared. Press Menu/Sel to sync the Encryption key to another transmitter or receiver via the IR port.

Input Gain Adjustment

The two bicolor Modulation LEDs (located at the bottom of the control panel) are used to accurately adjust the gain. They are upside/down from the keypad for viewing with the capsule close to your mouth.

The audio level is shown by LEDs and in the LCD screen.

The gain should be set so that the -20 LED just turns red on the loudest peak (the onset of limiting).

The LEDs will glow either red or green to indicate modulation levels as shown in the following table.

Signal Level	-20 LED	-10 LED
Less than -20 dB	● Off	● Off
-20 dB to -10 dB	● Green	● Off
-10 dB to +0 dB	● Green	● Green
+0 dB to +10 dB	● Red	● Green
Greater than +10 dB	● Red	● Red

It is best to go through the following procedure with the transmitter in the "standby" mode so that no audio will enter the sound system, which could cause feedback.

1. With fresh batteries in the transmitter, power the unit on into "standby" mode (RF output off)

2. Press the MENU/SEL button once to enter the setup menu. Use the UP/DOWN buttons to select Gain. Press the MENU/SEL button again to enter the setup screen.

3. Hold the microphone the way it will be used in actual operation.

4. Speak or sing at the same voice level that will actually be used during the program, while observing the modulation LEDs. Use the UP/DOWN but-tons to adjust the gain until the –20 dB LED starts to flicker red and

the

10 dB glows green.

5. Once the audio gain has been set, the signal can be sent through the sound system for overall level adjustments, monitor settings, etc. To do this, the unit must be set to transmit (see Powering On and Off, and the Standby Mode)..

Programmable Switch Functions

A special button on the outside of the housing can be configured to provide several different functions, or to be inoperative by selecting (none).

The ProgSw button on the keypad opens a setup screen to select the programmable switch function. Enter this setup screen and then use the UP/DOWN arrows to select the desired function and press the MENU/SEL button to return to the Main Window.
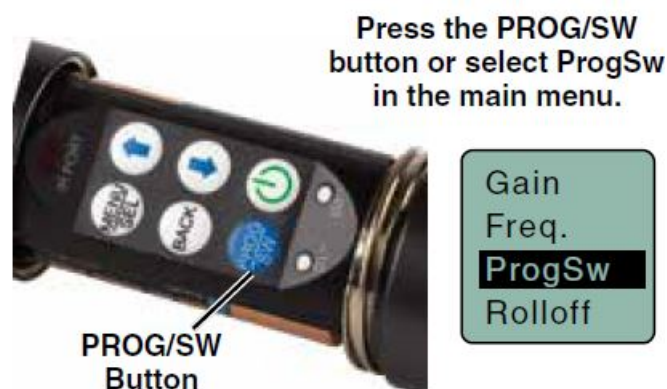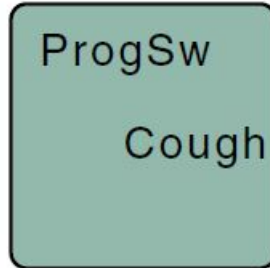

The ProgSw menu provides a scrollable list of the available functions. Use the UP/DOWN arrows to highlight the desired function and press BACK or MENU/SEL to select it and return to the main menu.
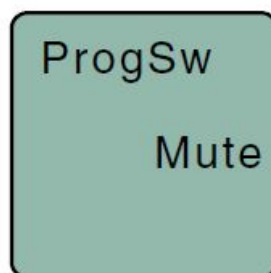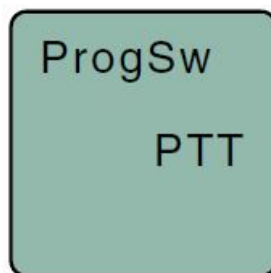
- Power turns the power on and off.Hold the button on the housing in until the countdown sequence from 3 to 1 is completed. The power will then be turned off.
  NOTE: When the button on the housing is set to Power, it will turn on the transmitter in the operating mode with the RF output on.
- Cough is a momentary mute switch. Audio is muted while the button on the housing is held in.

```
┌─────────────┐
│ ProgSw      │
│             │
│       Power │
│             │
└─────────────┘

┌─────────────┐
│ ProgSw      │
│             │
│       Cough │
│             │
└─────────────┘
```

- Push To Talk is a momentary talk switch. Audio is transmitted while the button on the housing is held (opposite of cough)
- Mute is a "push on/push" off function that toggles on and off each time the button on the housing is pressed. The mute function defeats the audio in the transmitter, so it works in all compatibility modes and with all receivers.

```
┌─────────────┐
│ ProgSw      │
│             │
│         PTT │
│             │
└─────────────┘

┌─────────────┐
│ ProgSw      │
│             │
│        Mute │
│             │
└─────────────┘
```

- (none) disables the button on the housing.
- TalkBk is a "push to talk" function that is active only while the button is pressed. The talkback function provides a communication channel when used with a receiver equipped with this function, such as a Venue Wideband receiver with firmware Ver. 5.2 or higher. When pressed and held in, the side button re-directs the audio output to a different audio channel on the receiver. As soon as the switch is released, audio is returned to the program channel.

ProgSw

(none)

ProgSw

TalkBk

Main Window Displays for Function

The function of the Programmable Switch is displayed in the LCD Main Window. In the None and Power functions, no indication is displayed. In the Mute and Cough functions, the word MUTE is displayed.

None/Power

Mute/Cough

Reverse video

Mute active
(MUTE blinks)
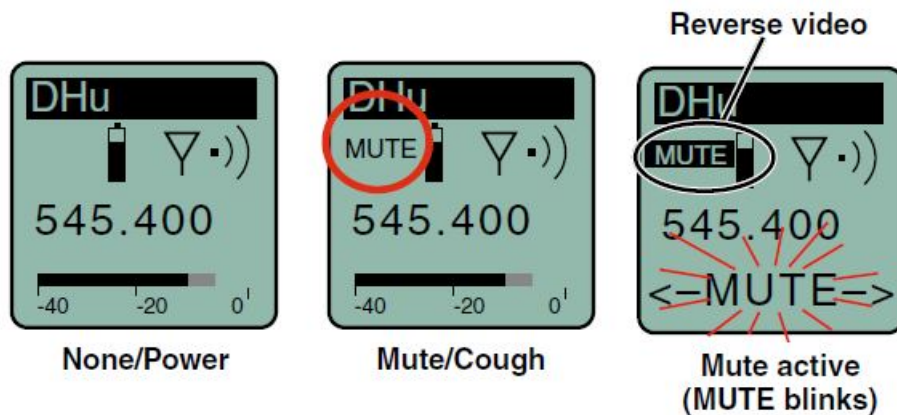
LIMITED ONE-YEAR WARRANTY

The equipment is warranted for one year from date of purchase against defects in materials or workmanship provided it was purchased from an authorized dealer. This warranty does not cover equipment that has been abused or damaged by careless handling or shipping. This warranty does not apply to used or demonstrator equipment. Should any defect develop, Lectrosonics, Inc. will, at our option, repair or replace any defective parts without charge for either parts or labor. If Lectrosonics, Inc. cannot correct the defect in your equipment, it will be replaced at no charge with a similar new item. Lectrosonics, Inc. will pay for the cost of returning your equipment to you. This warranty applies only to items returned to Lectrosonics, Inc. or an authorized dealer, shipping costs prepaid, within one year from the date of purchase. This Limited Warranty is governed by the laws of the State of New Mexico. It states the entire liability of Lectrosonics Inc. and the entire remedy of the purchaser for any breach of warranty as outlined above. NEITHER LECTROSONICS, INC. NOR ANYONE INVOLVED IN THE PRODUCTION OR DELIVERY OF THE EQUIPMENT SHALL BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THIS EQUIPMENT EVEN IF LECTROSONICS, INC. HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE LIABILITY OF LECTROSONICS, INC. EXCEED THE PURCHASE PRICE OF ANY DEFECTIVE EQUIPMENT. This warranty gives you specific legal rights. You may have additional legal rights which vary from state to state.

Documents / Resources

LECTROSONICS DHu-E01-B1C1 Digital Handheld Transmitter [pdf] User Guide
DHu-E01-B1C1, Digital Handheld Transmitter, Handheld Transmitter, DHu-E01-B1C1, Transmitter

References

- **Lectrosonics: Quality wireless microphone, encrypted digital wireless and DSP audio processing systems**