REVOLABS EXECUTIVE HD™

Wireless Microphone System
Models: 01-HDEXEC, 01-HDEXEC4, 03-HDEXECEU and 03-HDEXEC4EU

Installation and Operation Guide

revolabs

Contents

Safety and General Information

Please read the following information to ensure safe and efficient use of your Revolabs system.

FCC User Information

FCC Registration Number: 0014898290

FCC ID: T5V01HDEXEC   Revolabs Executive HD™ Base Station

FCC ID: T5V01HDEXEMIC   Revolabs Executive HD ™ Microphone

FCC Notice to Users

Users are not permitted to make changes or modify the equipment in any way. Changes or modifications not expressly approved by Revolabs, Inc. could void the user's authority to operate the equipment.

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.

IMPORTANT NOTE: Federal Communications Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits for an uncontrolled environment.

Professional Installation Recommended

This product should be professionally installed.

Industry Canada Notice to Users

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

IC: 6455A-01HDEXEC   Revolabs Executive HD™ Base Station

IC: 6455A-01HDEXEMIC   Revolabs Executive HD ™ Microphone

Restricted use with certain medical devices

Hearing Aids

Some devices may interfere with some hearing aids. In the event of such interference, you may want to consult with your hearing aid manufacturer to discuss alternatives.

Other Medical Devices

If you use any other personal medical device, consult the manufacturer of your device to determine if it is adequately shielded from RF energy. Your physician may be able to assist you in obtaining this information.

Export Law Assurances

This product is controlled under the export regulations of the United States of America and Canada. The Governments of the United States of America and Canada may restrict the exportation or re-exportation of this product to certain destinations. For further information contact the U.S. Department of Commerce or the Canadian Department of Foreign Affairs and International Trade. The use of wireless devices and their accessories may be prohibited or restricted in certain areas. Always obey the laws and regulations on the use of these products.

01-HDEXEC and 01-HDEXEC4 (4 & 8 channel systems respectively) North America UPCS Usage Restriction

Due to the UPCS frequencies used, this product is licensed for operation only in the United States of America and Canada.

03-HDEXECEU and 03-HDEXEC4EU (4 & 8 channel systems respectively) European Union Usage Restriction

Due to the DECT frequencies used, this product is licensed for operation only in the European Union countries.

European Compliance

This equipment has been approved in accordance with Council Directive 1999/5/EC "Radio Equipment and telecommunications Equipment.

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Conformity of the Equipment with the guidelines below is attested by the CE mark.

Model Numbers:

03-HDEXEC4EU-NM	Executive HD System, 4-Channel, w/o mics
03-HDEXECEU-NM	Executive HD System 8-Channel, w/o mics
03-HDEXEMICEU-11	HD Microphone, RF-Armor™ Wearable*
03-HDTBLMICEU-OM-11	HD Microphone, RF-Armor™ Tabletop, Omni-directional*
03-HDTBLMICEU-DR-11	HD Microphone, RF-Armor™ Tabletop, Uni-directional*
03-HDXLRMICEU-11	HD Microphone, Dynamic XLR Wireless Adapter for Handheld*

Standards to which Conformity is declared:

RF   ETSI EN 301 406 V 1.4.1 03/2001

EMC   ETSI EN 301 489-6 v1.2.1 (2002-04)

WEEE Notification:

The Waste Electrical and Electronic Equipment (WEEE) directive (2002/96/EC) is intended to promote recycling of electrical and electronic equipment and their components at end of life.

2003/11/EC & 2002/95/EC "RoHS Compliance Directive":

The products referenced herein are in compliance with the EU directive 2003/11/EC and EU directive 2002/95/EC.

Introduction

Congratulations on your purchase of a Revolabs digital wireless microphone system! This system utilizes 1.9 GHz DECT technology, and high band-width audio from multiple wireless microphones, enabling clear, reliable, un-tethered communications in recording, audio/video conferencing, speech recognition, VOIP communications, sound re-enforcement as well as many other environments requiring clear audio capture.
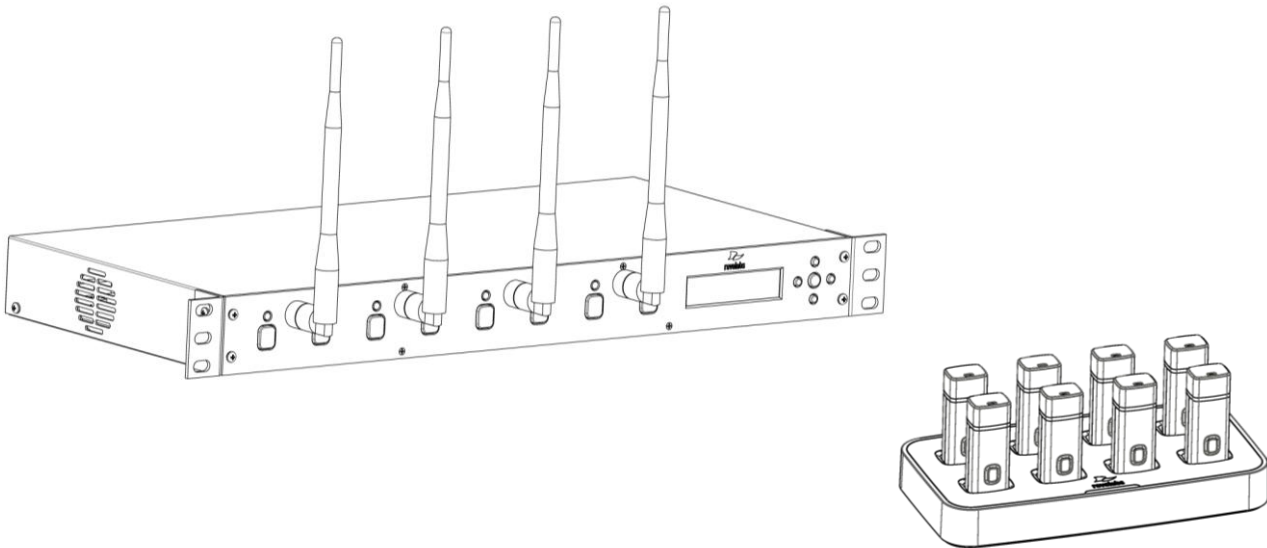
The Revolabs Executive HD ™ Wireless Microphone System is a second generation technology that contains substantial improvements to audio performance, microphone density and user interface/control including an Ethernet interface. The Executive HD system is a unique marriage of innovative technology and ergonomic design, employing Multi-Carrier Time Division Multiple Access and Time Division Duplex (MC/TDMA/TDD) radio transmissions both to and from the microphone.

This technology allows the microphones to co-exist with other wireless products such as wireless LANs (802.11b&g), and includes digital encryption technology to ensure secure communications.

System Components

Depending on which system you've purchased, your Revolabs Executive HD ™ System package contains the following:

- Rack mountable 4 or 8 channel Base Station
- Microphone Charger Base
- HD wireless microphones, (earpieces and lanyards with wearable microphone only).

The Base Station houses the processor and one end of the wireless connection. It features either two (4 Mic system) or four (8 Mic system) diversity antennae and offers individual line-level or mic-level audio in/out for each microphone channel. This allows for external audio processing such as:

- Mixing
- Acoustic echo cancellation (AEC)
- Feedback elimination
- Level control
- Equalization
- Noise cancellation

The system is designed to optimize audio capture/reproduction by providing:

- Consistent audio input from all participants
- Minimum room noise
- Mute control
- Wireless encryption
- Automatic channel selection
- Full duplex audio.

The Charger Base stores and charges the wireless microphones when not in use. The Charger Base also serves as a programming station for the microphones, should firmware updates to the microphones be required.
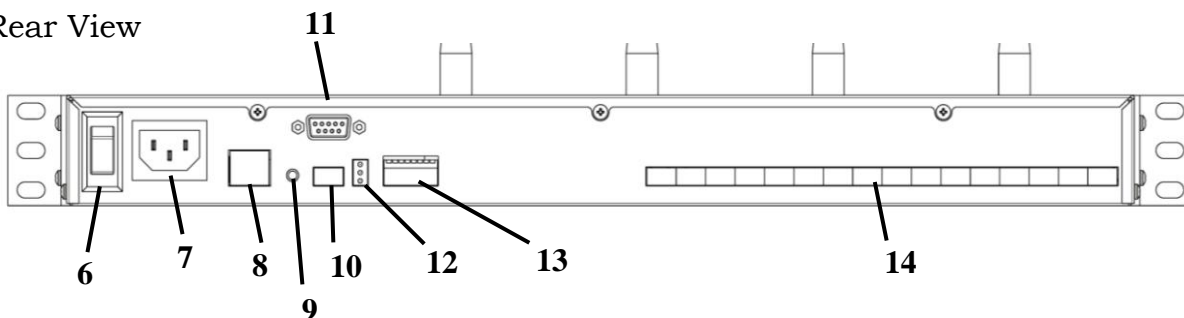
Installing the Revolabs Executive HD ™ Base Station

The Revolabs Executive HD ™ Base Station, shown below in front and rear panel views, manages wireless audio signal processing, pairing, and muting between the Revolabs microphones and the Base Station.

Front View
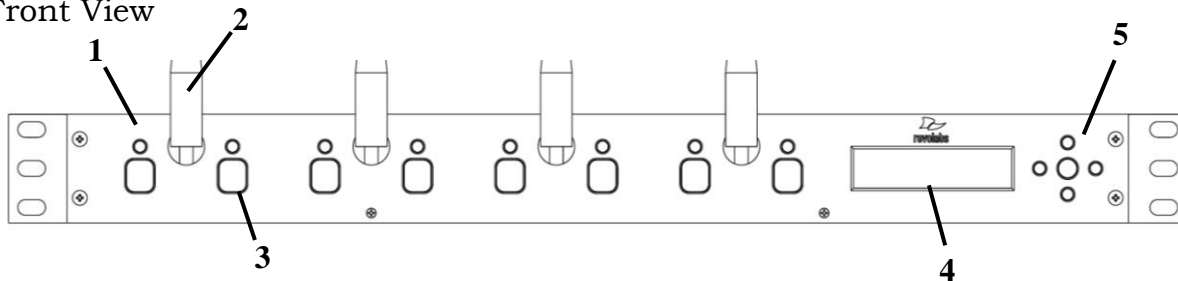
Rear View

Controls and Connections:

1. Channel LED indicators: Displays microphone mute and pairing states.
2. Diversity Antenna: One or two sets (4 channel or 8 channel).
3. Pairing Push Buttons: For pairing microphones to Base Station.
4. Two Line LCD Display for front panel operation, command and control.
5. Navigation Buttons for menus on front panel LCD interface. (see Section *Using the Base Station Front Panel Display*)
6. On/Off Switch: Powers up unit.
7. Power In Receptacle (100-240 VAC).
8. Ethernet Port
9. System Reset Button
10. Mini-Phoenix Connector: Multiple Base Station (BUS) synchronization connection.
11. RS-232 Serial Interface, DB9 (see Section *Using the Serial Control Processor (RS232 or IP)*
12. Base station status LED's (see Section *Revolabs Executive HD ™ Indicator LEDs*)
13. Configuration DIP Switches (see Section *Using the Rear Panel Configuration DIP switches)*
14. Mini-Phoenix Connectors: Balanced Audio in and out connections (4 or 8 channels, in and out).

The Revolabs Executive HD ™ Base Station is designed to be installed into a standard 19" AV rack using the attached rack ears.
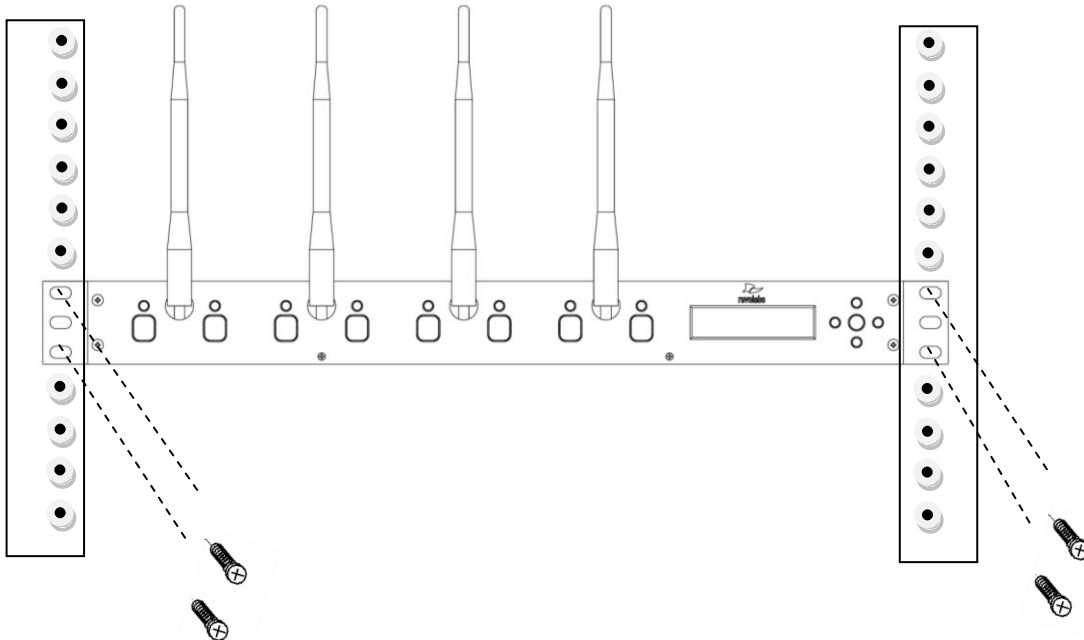
To Install the Base Station:

1. Plug the power cord into an appropriate outlet.
2. Turn the fuse-protected power switch on the back panel to "RESET".
   The LCD on the front panel will illuminate.
3. Attach the diversity antennas (2 or 4 SMA female connectors).

Revolabs Executive HD™ Audio Connections

There are (8) 3.5mm mini-Phoenix inputs and (8) 3.5mm mini-Phoenix outputs on the back panel of the unit (four on the 4-channel system) providing access to each channel's audio signal.

The provided mini-Phoenix connectors are designed for easy wiring. The three terminals (from left to right) correspond to positive **+**, negative **-**, and shielded ground□.

To connect audio In/Out on the Base Station

1. Use the screws on top of the connector to first loosen the terminals.
2. Insert an appropriate 3 conductor cable (3 separate conductors, or 2 conductors and shield) into the terminals.
3. Tighten the screw to secure the cable.
4. Push the connector onto the pins centered under the desired input or output port until firmly secured.

There are four or eight output channels representing a separate channel for each microphone. Accordingly, there are four or eight input channels to the unit. The microphone output connectors need to be attached to the line-level (0dBu) input connectors of an audio mixer. **PHANTOM POWER MUST BE OFF. PHANTOM MAY CAUSE DAMAGE TO THE BASE STATION**.

The Base Station input connectors (also 0dBu) may then be attached to mixer channel outputs. Because the system is full-duplex, the input connections provide the ability to hear program audio using a 2.5mm earpiece attached to the microphone (supplied with the wearable microphone).

Depending on the application, it is possible to feed a single mixed channel back to all earpieces or, alternatively, each user can receive a separate and unique channel. This would allow for translation, personal hearing assistance or other services to be incorporated into an application.

Configuring the Executive HD™ Base Station

Each Revolabs Executive HD™ Base Station must be configured properly prior to use. Accurate configuration is dependent on several variables such as:
1. How many Executive HD™ systems are being used together in proximity?
2. What type of 3rd party mute control is being used?
3. How large is the room?
4. Is Line Level or Mic Level signal required?
5. How do the mic mutes need to function?

Once these questions are answered, accurate configuration of the Executive HD base can be achieved using a combination of the following methods.

Using Multiple Revolabs Executive HD™ Systems Together

If more than one Revolabs Executive HD ™ Base Station is used in an area, each unit needs to be interconnected with a synchronization (BUS) cable using a standard 3.5mm mini-Phoenix connector and any 24AWG or better shielded cable. In addition, DIP switch #1 needs to be adjusted on one or more of the units to represent the 'Primary' and 'Secondary' devices.

The three terminals of the BUS connector should be wired in parallel (seen left to right with the connector installed). The three contacts of the phoenix connector are as follows from left to right.

1. Sync
2. Master Mute
3. Ground

Set one Base Station as the Primary device by putting DIP switch #1 to the 'Off' position. The other units must be set as Secondary devices by putting DIP switch #1 to the 'On' position. In this configuration, the Primary device manages the entire system, distributing microphone transmission across available channels to maintain frequency integrity, and coordinating system muting.

Primary (DIP switch 1, Off – default): This designates the Base Station as the master control unit.

Secondary (DIP switch 1, On): Additional base stations to be used in the same area must be connected via the BUS **and** be set to REMOTE mode to ensure synchronization of timing clocks between bases.

Local (DIP#1 –off)   Remote (DIP#1 –on)   Remote (DIP#1 –on)

3-wire BUS cable
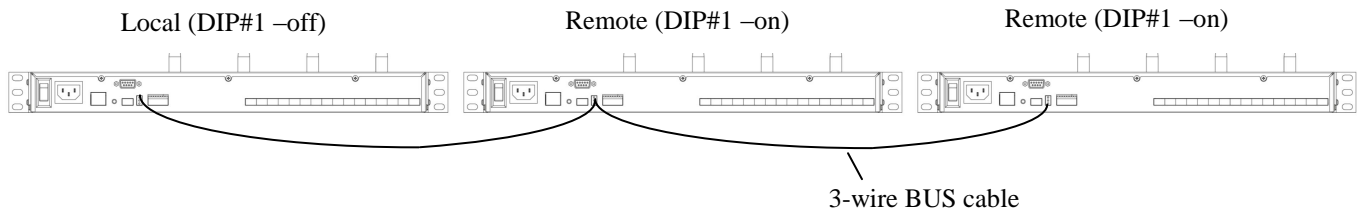
Note: *Whenever a DIP switch is toggled, the base unit should be reset, or the power should be cycled (or press the 'reset' button on the rear panel) for the switch setting to be registered. The 'Primary' device should be completed booted (60 Seconds) before any connect 'Secondary' devices are powered on. This ensures proper synchronization.*

Warning: *The switch must be in the 'Primary' position for a single Base Station system, which is the factory default setting. Microphones will not function if the switch is in the 'Secondary' position and no 'Bus' cable is connected.*

The maximum number of microphone channels within a 100' (30m) radius in North America is 16 channels (High Definition mode) or 32 channels (Max Density mode). The maximum number of channels within a 100' (30m) radius for an EU frequency system is 24 channels (High Definition mode) or 40 channels (Max Density mode). (See Section *Using the Revolabs HD Control Panel Software*)

Note: *Using Revolabs Executive or Executive HD systems in the same area(s) without the bases connected via the BUS can result in interference*

Warning: *Using the maximum number of Revolabs HD Microphones in a given will occupy 100% of the available RF bandwidth. Any other wireless device operating in the same frequency could cause significant interference with the Revolabs HD Microphones. It is recommended that no other DECT or DECT 6.0 products be used within operational range of the Executive HD system(s).*

Using the Rear Panel Configuration DIP Switches

off
on

1 2 3 4 5 6 7 8
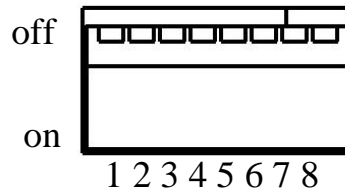
- 1 – Operation Mode - Primary (off)/Secondary (on)
    - Used when connecting several base stations together for operation in the same area. One system must be set to 'Primary', and all others must be set to 'Secondary'.
- 2 - future use
- 3 - future use
- 4 – Audio Output Level - Line (off)/Mic (on)
    - This controls the output audio level on all audio output connectors. Line level audio out (default) refers to an output signal voltage of ~0 dBu, and a Mic Level output signal level is ~-40 dBu.
- 5 - future use
- 6 - future use
- 7 - future use
- 8 - future use

Using the Revolabs HD Control Panel Software

A software program with graphical user interface is available for accessing control settings and real-time status of Revolabs Executive HD microphone systems. A detailed description of how to use this tool is described below.

1. Download the Revolabs Audio Control Panel software from http://www.revolabs.com and install onto a PC.
2. Connect the PC to the same network as the Base Station via either a Ethernet Crossover Cable, or network switch.
3. If no DHCP server is present, set the fixed IP on the PC to the same subnet as the IP address displayed on the Base Station front panel display.
4. Launch the Revolabs HD Control Panel program.
5. Select 'Scan Network' from the 'Box' menu or hit the F5 key, and the HD Control Panel will automatically find and display any Revolabs Executive HD base stations visible on the network (the program cannot see through firewalls, etc.).
6. Select the devices needing to be configured and click 'OK'

Configuration Settings

The Revolabs HD Control Panel controls the Executive HD Base Station configuration settings. Most of the configuration settings can only be controlled from the HD Control Panel. However, some of the configuration settings can also be controlled from the Base Station front panel display. All configuration settings are located either in the 'Config' tab of the device window or on the HD Control Panel menus.
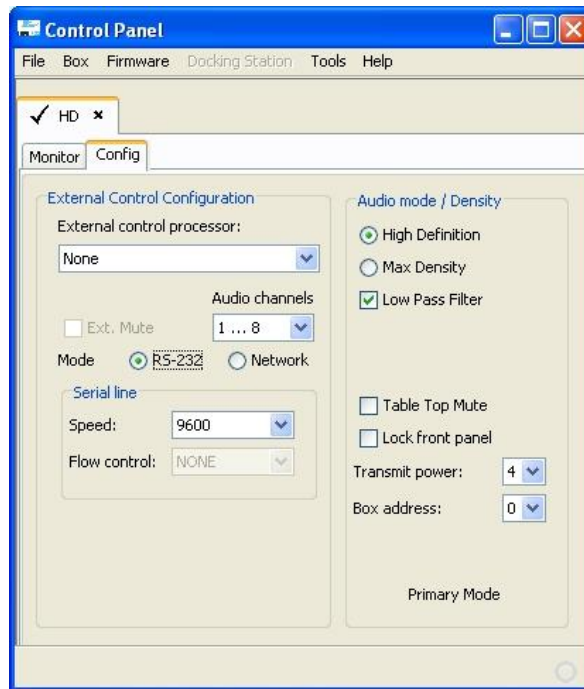
Scan Network

The 'Scan Network' option of the 'Box' menu will search the connected Ethernet network for all connected HD Base Stations. A pop-up 'Equipment List' will show all discovered devices and allow the connection to the selected Base Station(s). Once connected to a Base Station, the HD Control Panel will open a device tab for each Base Station.
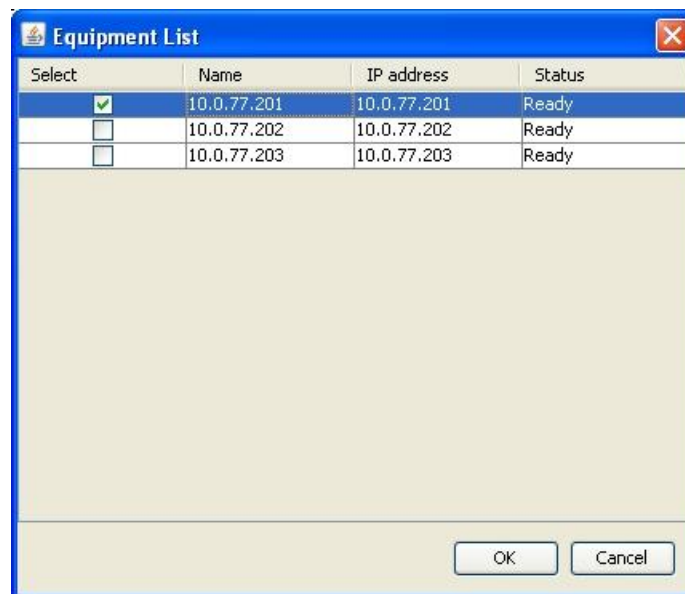
Note: *If the 'Equipment List' does not appear after a network scan has been performed, no devices or network connections were found.*

Set Box Name

A Box Name may be assigned as a Network title for each device. The Box Name can be set by selecting 'Set Name' from the 'Box' menu. The corresponding pop-up will show the current box name which can be changed.
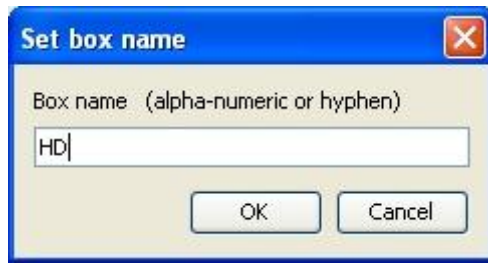
Set Telnet Password

A Telnet Password may be assigned for logging into a Base Station. Once a Telnet Password is assigned, it must be entered to communicate with the Base Station over Ethernet. The Telnet Password can be set by selecting 'Set Password' from the 'Box' menu. The corresponding pop-up will show if a password has been set and will allow the password to be changed.

Set IP Configuration

Executive HD Base Stations are set by default to look for a DHCP server when an Ethernet connection is present. If no DHCP server is found, the Base Station will auto-populate its own IP address and display it on the front panel display. This automatic IP address will change every time the Base Station is rebooted for as long as DHCP is enabled.

If no DHCP server is available, or if a fixed IP is desired, the DHCP option can be switched off and a fixed IP can be assigned to the Base Station. The IP Configuration can be set by selecting 'Set IP Config' from the 'Box' menu. The corresponding pop-up will show the current IP configuration and allow the configuration to be changed.
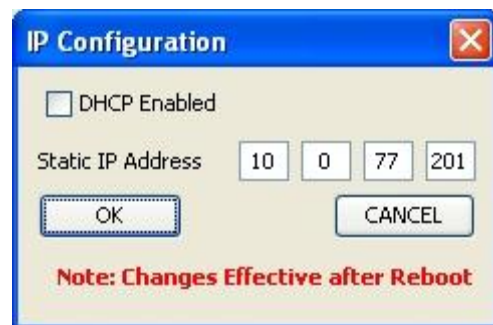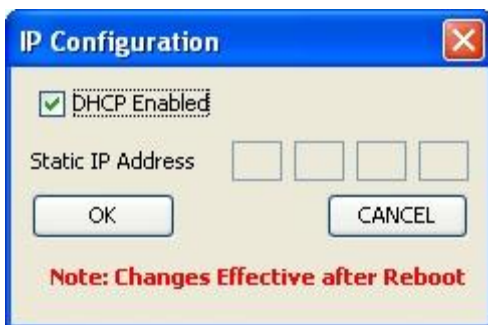
Note: *Changes to the IP Configuration will only take place once the Base Station's power is cycled.*

Update Firmware

Executive HD Systems are field upgradable for the firmware portion of the Base Station and Microphones. The firmware must be sent to the Base station and Microphones separately using the HD Control Panel program. (See *Updating the Revolabs HD Firmware* for more information*)*

Serial Control Processor

The Serial Control Processor allows the use of third party control system or DSP to monitor and control the Executive HD Base Station and Microphones. See *Using the Serial Control Processor* for more information.

Audio Mode

There are two audio modes to choose from when using an Executive HD System. 'High Definition' mode (default) which provides 50Hz-20KHz audio, and 'Max Density' mode which provides 50Hz-12KHz audio. While 'High Definition' mode provides the highest audio bandwidth, 'Max Density' mode provides the ability to use more mics in a given area. This configuration setting can also be controlled using the Base Station front panel display.

Note: *A change to the Base Station Audio Mode will result in an automatic system reboot.*

Low Pass Filter

Each Executive HD Audio Mode is set by default to use a predetermined Low Pass Filter (LPF) to optimize the microphone performance. This LPF can be deactivated in each mode to allow the maximum available audio bandwidth to pass. In 'High Definition' mode the LPF is set to 15KHz and in 'Max Density' mode the LPF is set to 8KHz.

Table Top Master Mute

The Executive HD System provides two options for microphone mute performance.

The default option allows each microphone to have its own individual mute capabilities as well as a Master Mute function that will lock all mics into a muted state until the function is disabled. The Master Mute can only be triggered by a control system via RS-232 or Ethernet.

The second option allows all table top style microphones to act as a Master Mute, leaving only the Wearable microphones and XLR adapters with individual mute capabilities. Muting any table top style microphone will cause all microphones in the system to mute until another table top microphone mute button is pressed. Un-muting a table top style microphone will cause all table top microphones to un-mute and will return all Wearable microphones and XLR adapters to their previous state of individual mute capability. The 'Table Top Master Mute' mode can be activated by selecting the option in the 'config' tab of the device window.

Note: *When a Master mute is enabled either through the control system or by using Table Top Master Mute mode, all Base Stations connected with a bus cable will be affected. You can eliminate the Master Mute communication between Base Stations by not terminating pin 2 on the bus connector.*

Transmit Power
The transmit power of the Base Station can be adjusted to help reduce the operational radius of a Executive HD System in order to prevent interference from other Revolabs Products, or from other devices operating in the same frequency. The options for transmit power are '0-7' with '0' representing the lowest power and '7' representing the highest power. This configuration setting can also be controlled using the Base Station front panel display.

Note: *It is recommended that the lowest functioning Transmit Power be used for each system.*

Box Address
Each Executive HD Base Station must be assigned a unique Box Address when multiple Base Stations are connected with a BUS cable. The options for Box Address are '0-7' with '0' being the default.

Note: *The Master Mute function will not propagate to the entire HD system if each connected Base Station does not have its own Box Address.*

Lock Front Panel Display
The Front Panel display can be locked to keep the front panel controls from changing any configuration settings. The 'Lock Front Panel' mode can be activated by selecting the option in the 'config' tab of the device window.

Base Station Operation Mode
This displays the current state of DIP switch #1 located on the rear panel of the Base Station. It will display either 'Primary' or 'Secondary' mode.

Status Monitoring:

The Revolabs HD Control Panel monitors the Executive HD Base Station and Microphones. All status monitoring is located in the 'Monitor' tab of the device window.
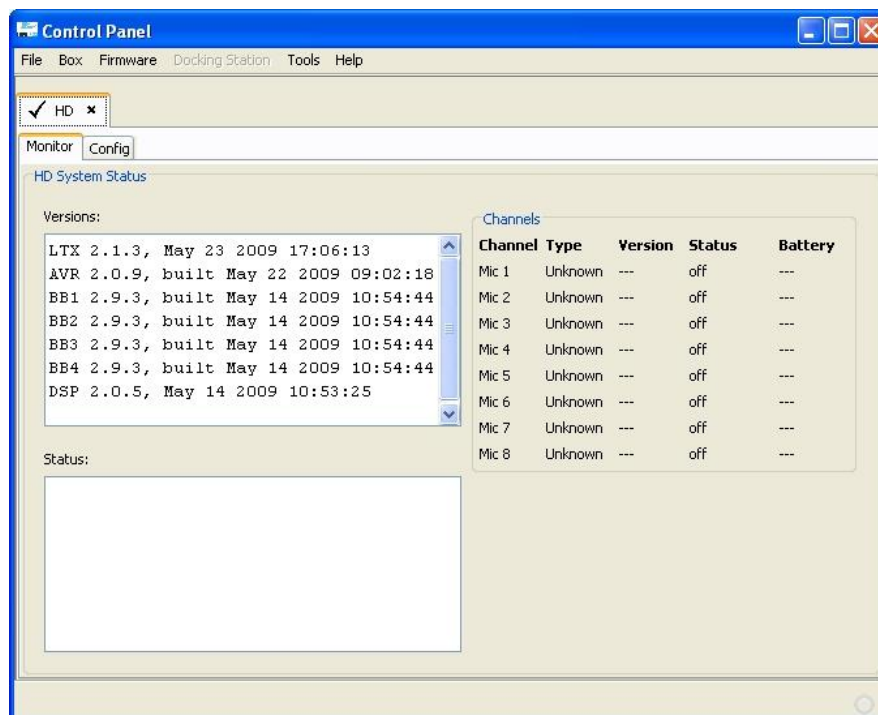
Microphone Type
This provides the current type for the microphone that is active on each channel.

Microphone Status
This provides the current status for the microphone paired to each channel.

Microphone Version
This provides the current firmware version for the microphone that is active on each channel.

Microphone Battery
This provides the current battery level for the microphone that is active on each channel.

Versions
This window provides all the current firmware versions found in the Base Station.

Status
This window provides any activity status between the HD Control Panel and either the Base Station, or the Charger Base.

Using the Serial Control Processor (RS-232 or IP)

The Serial Control Processor allows the use of a third party control system or DSP to monitor and control the Executive HD Base Station and Microphones. The Executive HD Base Station must be configured for the correct "Serial Control Processor" using the Revolabs Audio Control Panel software.

Using the Executive HD Base Station with a Control System

The Executive HD Base Station is capable of being monitored and controlled via any serial capable control system. The only logic communication that takes place between multiple Base Stations, via the 'BUS' cable, is "Master Mute" status. Therefore, each Base Station requires its own serial connection to the control system in order to communicate. The "Control System" option must be selected, under the "External Control Processor" drop down menu in the Executive HD Control Panel program, in order for this configuration to function properly. You must also set the RS-232 or Network settings of the Base Station to match the communication settings of the control system.
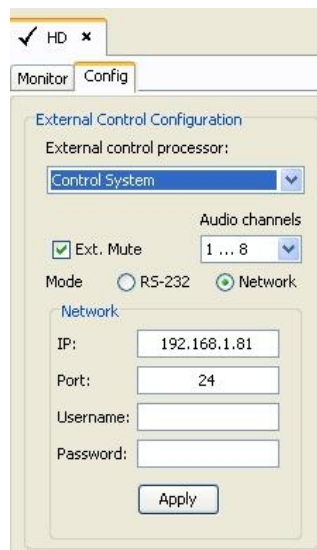
When using a control system, the microphone mutes can be configured to "int. mute" (default), which mutes the microphone audio inside of the base station, or "ext. mute", which allows the control system to choose another location for the mute to take place.

Note: *Both a control system and DSP cannot be connected to a Base Station at the same time. When using a control system, the DSP control must be done by the control system and not the Base Station.*

Serial Command & Return Strings:
The Serial Strings of an Executive HD Base Station begin with the Argument and terminates with a Carriage Return. The Command String structure is as follows:

    \<Argument\> \<Command\> ch \<Channel #\> \<Value\> \<CR\>

All Command Strings sent to the Base Station will provide a Return String confirming the change has taken place. Return Strings will begin with "val" and terminate with a Carriage Return. You will receive a Return String for every action that has taken place as a result of the Command String sent to the Base Station. The Return String structure is as follows:

    val \<Command\> ch \<Channel #\> \<Value\> \<CR\>

String Table:

Argument	Command	Channel#	Value
set	mute	1-8 = ch 1-8	0 = off
		A = Master Mute	1 = on
get	mute	1-8 = ch 1-8	
		A = Master Mute	
	batt	1-8 = ch 1-8	
val	mute	1-8 = ch 1-8	0 = off
		A = Master Mute	1 = self mute on (TT Master Mute Mode)
			2 = on
			3 = unknown (Mic is off or out of range)
	batt	1-8 = ch 1-8	0 = empty
			1 = 25%
			2 = 50%
			3 = 75%
			4 = 100%

Channel #:
The options for the <Channel#> portion of the serial strings are "1-8" since each Base station can only control up to 8 channels of an Executive HD microphone system. The <channel#> corresponds to the physical channel that the microphone is paired to on the front of each Base Station.

A <Channel#> of "A" will enable or disable the Master Mute mode. This command must only be sent to the Base Station that is set to "Local". "Remote" Base Stations will not accept the command.

Examples:
The following strings would unmute microphone channel 3:

Command: *set mute ch 3 0*   Return: *val mute ch 3 0*

The following strings would turn on the Master Mute:

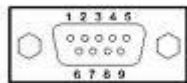Command: *set mute ch A 1*   Return: *val mute ch A 1*

The following strings would retrieve the battery status of mic 5 @ 100%:

Command: *get batt ch 5*   Return: *val batt ch 5 4*

Note: *All return strings will automatically populate when the corresponding change to the microphone takes place.*

DB9 Pin-out:
Pin 2 = Rx
Pin 3 = Tx
Pin 5 = GND
Pin 7 = RTS
Pin 8 = CTS

Using the Executive HD Base Station with a DSP

The Executive HD system is designed to control the mutes of a DSP directly in the event that a control system is not present. The Base Station must be configured for the correct "Serial Control Processor", using the Executive HD Control Panel software, in order to send the mute commands to the DSP. In addition, each DSP model must be configured differently to receive the correct mute commands.

Clearone Converge & XAP
When using the Base Station along with a Clearone DSP, you must select the corresponding DSP product line from the "Serial Control Processor" menu in the Revolabs HD Control Panel software. You must also set the RS-232 or Network settings of the Base Station to match the communication settings of the Clearone DSP. The Base Station will only control the mutes of the DSP it is connected to. A 4 channel Base Station will control microphone channels 1-4 of the DSP, and an 8 channel Base Station will control microphone channels 1-8 of the DSP.
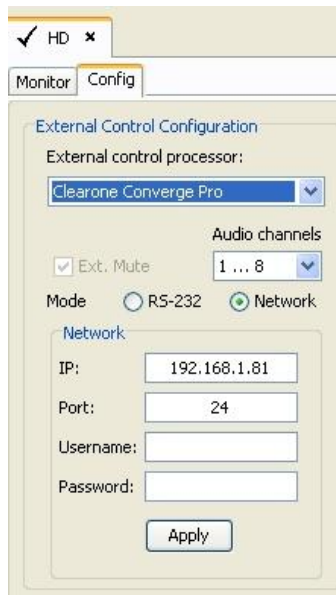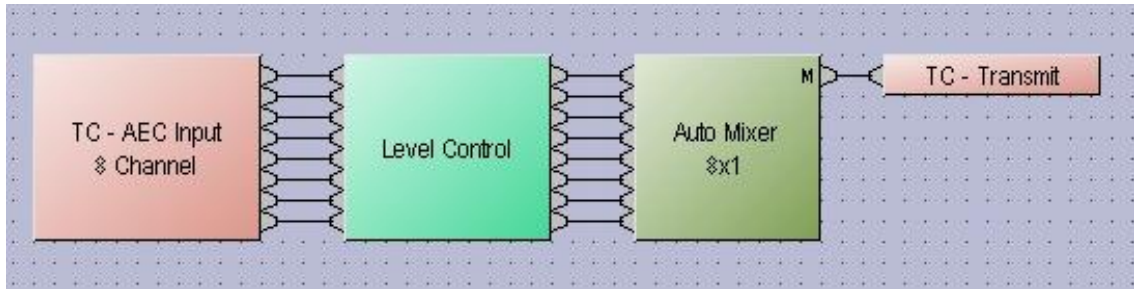
Biamp Audia & Nexia

When using the Base Station along with a Biamp DSP, you must select the corresponding DSP product line from the "Serial Control Processor" menu in the Revolabs HD Control Panel software. You must also set the RS-232 or Network settings of the Base Station to match the communication settings of the Biamp DSP as well as select the 'Audio Channels' of the microphones that the Base Station is to simulate.(i.e. 1-8, 9-16, etc.)
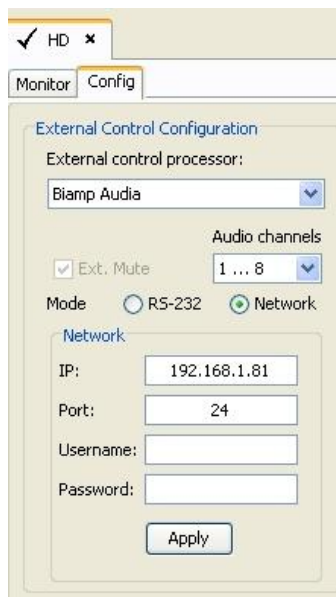

Each Base station will control the mutes of a "level block", within the DSP programming, using that block's instance ID tag. The tags are as follows:

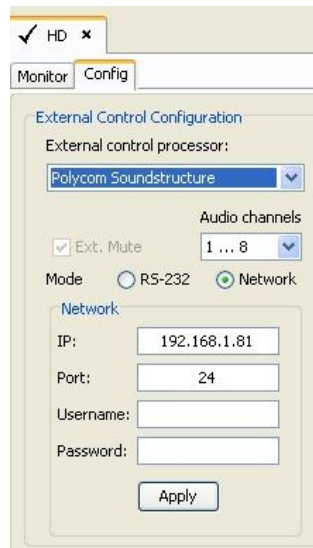|	
Audio Channels 1-8	MUTE1
Audio Channels 9-16	MUTE2
Audio Channels 17-24	MUTE3
Audio Channels 25-32	MUTE4

So for example, if you set the 'Audio channels' for the microphones to 1-8, in the Control Panel, then the Base Station will use the instance ID tag of "MUTE1", and control the first 8 mutes in that fader block.
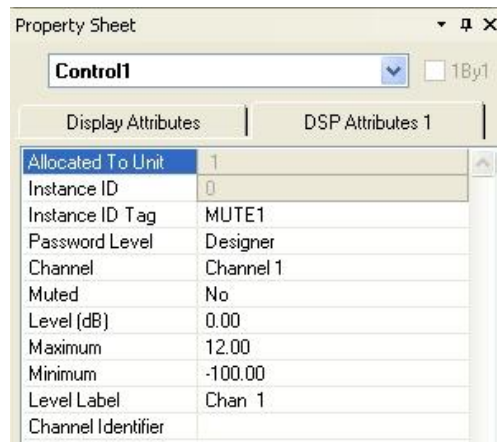
Note: *Instance ID tags are case sensitive and must be entered correctly in order to function properly. A "level block" must be used as the method of muting.*

Polycom Soundstructure
When using the Base Station along with a Polycom Soundstructure, you must select the corresponding DSP product line from the "Serial Control Processor" menu in the Revolabs HD Control Panel software. You must also set the RS-232 or Network settings of the Base Station to match the communication settings of the Polycom Soundstructure as well as select the 'Audio Channels' of the microphones that the Base Station is to simulate.(i.e. 1-8, 9-16, etc.)

Each Base station will control the mutes of each individual microphone channel, within the DSP programming, using that channels name. The name structure is as follows:

Channels 1-8	Revo 1-Revo 8
Channels 9-16	Revo 9-Revo 16
Channels 17-24	Revo 17-Revo 24
Channels 25-32	Revo 25-Revo 32

So for example, if you set the 'Audio channels' range for the microphones to 1-8, in the Control Panel, then the Base Station will use the DSP channel name of "Revo 1" to control mute for the microphone paired to channel 1 of the Base Station.

Note: *Channel names are case sensitive and must be entered correctly to work.*

Using the Base Station Front Panel Display

The Base Station has four or eight indicator LEDs (one for each channel) and pairing push buttons on the front panel. (See Section *Pairing Wireless Microphones to Base*) When the LED is flashing GREEN or RED, that channel is active and connected to a wireless microphone (GREEN is for live audio, RED is for muted). When the LED is OFF, the channel is inactive (the microphone is out of range or turned off).

The LCD and menu buttons are designed to provide the system installer the ability to access certain configuration settings directly from the front panel instead of having to use the Revolabs HD Control Panel software.
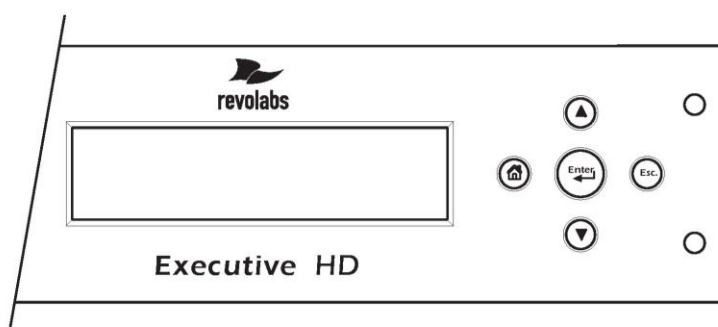
▲ Navigation up

▼ Navigation down

(⌂) Return to Main Menu

(Enter) Select Item

(Esc.) Backup one menu level

The front panel will display the current firmware or the current IP address of the Base Station during normal operation. During a firmware upload, the front panel will display the current progress of the firmware upload.

The following is a list of the configuration settings that can be changed using the front panel display controls.

1. Select High Definition or Max Density modes
2. Select the operation range of the Base Station
3. Select the microphone mute mode

Note: *Switching between High Definition and Max Density modes will cause the Base Station to automatically reboot.*

Revolabs HD Microphones and HD Microphone Adapters

Use any of four microphones with your Revolabs Executive HD ™ System:

- Revolabs HD Wearable Wireless Microphone
- Revolabs HD Omni-directional Tabletop Wireless Boundary Microphone
- Revolabs HD Uni-directional Tabletop Wireless Boundary Microphone
- Revolabs HD Universal Wireless Adapter for Handheld Microphones

Using the HD Wearable Wireless Microphones

The Revolabs HD Wearable Microphones, shown in the following figure, are paired to the Base Station and can be worn on the user's shirt pocket, lapel or on a lanyard. They provide high quality full duplex audio between each user and the conferencing or audio system.
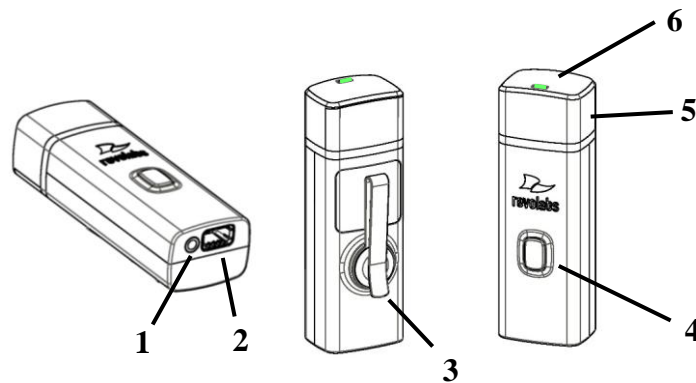

1. Earpiece jack — accepts the 2.5mm plug for the earpiece.
2. Charging port — docks to Executive HD Charger Bases.
3. Pocket clip — also used to attach microphone to a lapel, blouse or lanyard.
4. Mute Button — press to mute, un-mute and pair microphone.
5. Acoustic cover - microphone element end of the device
6. LED display — visual status for mute, un-mute, and pairing.

Note: *Microphones in new systems must be paired to the Base Station with each microphone assigned to a unique channel on the base unit. See pairing instructions below.*

Revolabs HD Wearable Microphones turn on and mute automatically when removed from Charger Base, to reduce noise while being attached.

To use the HD Wearable Microphone:

1. Remove the microphone from the Charger Base.
2. Attach the microphone to clothing or to a lanyard, position microphone just above the sternum or breastbone, within 6 - 12 inches (15 – 30cm) from the mouth is recommended. Make sure microphone is attached securely with the microphone port pointed up toward mouth.
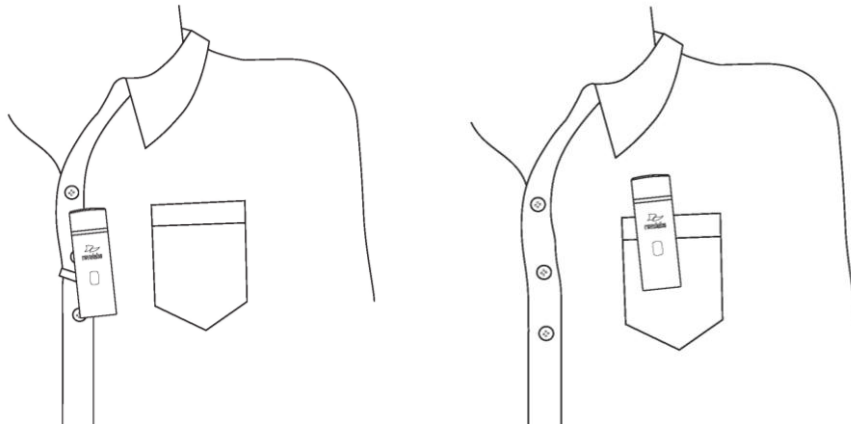

3. With the microphone in the wearing position, un-mute the microphone by pressing and releasing the Mute button (confirm by a flashing GREEN LED). If the volume is too low, move the microphone closer to the mouth.
4. To turn microphones off, return the microphone unit to the Charger Base or press and hold the Mute button for ~10 seconds until the LED turns solid RED then release button.

If the microphones are moved out of range of the Base Station (~100 feet or 30 meters) the connection will be dropped (LED flashes all red, green, yellow) and the microphone will mute.

After 15 seconds the microphone will beep 5 times, and will continue beeping every 30 seconds to remind the user to return the microphone to the conference room. If the microphone is moved back into range within 15 minutes the connection will automatically be re-established to its original state, and the beeping will cease. If not, the microphone will turn off.

Adjusting the Volume on the Wearable Microphone Earpiece

To change the volume on the Wearable microphone earpiece, use the dial on the earpiece wire.
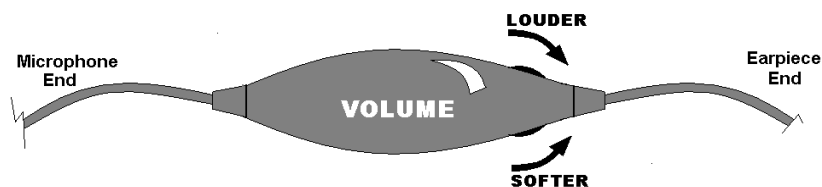
Turning the dial towards the earpiece, as shown in the figure, will increase the volume, and turning the dial towards the microphone will decrease the volume. Use the attached clothing clip to secure the earpiece wire.

360 º pickup pattern
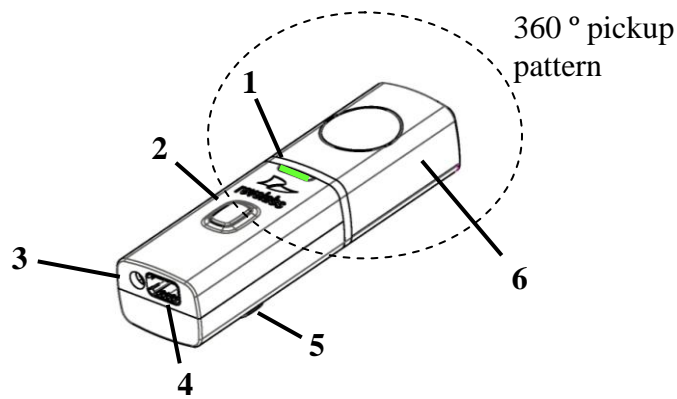
Using the HD Omni-Directional Tabletop Wireless Boundary Microphones

The HD Omni-directional TableTop Wireless Boundary Microphones enable multiple conference attendees to use a single microphone.

1. LED display — visual status for mute, un-mute, and pairing.
2. Mute button — press to mute, un-mute and pair microphone.
3. Audio jack — accepts a 2.5mm plug.
4. Charging port — docks to Solo Charger Bases.
5. Rubber feet — non-slip, vibration absorbing pads.
6. Acoustic Cover — protects delicate microphone element (non-removable).

To use the HD Omni TableTop Microphone:

1. Remove the microphone from the Charger Base to turn on and automatically mute the mic (indicated by a flashing RED LED) during placement on the conference table.

2. Omni TableTop microphones can be centered on the table within 2 to 5 feet (0.6 to 1.5m) away from people speaking and do not need to be pointing any particular direction because they pickup sound from all directions. It is always better to be as close to the person speaking as possible, but avoid placing the microphone where it might be blocked by equipment or paperwork. Avoid placing microphones too close to an audio or video conference speaker to avoid echoes. Make sure that the microphone is always placed lying on its rubber feet atop a flat surface.
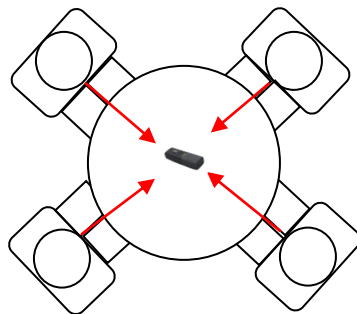
3. With the microphone in position on the table, un-mute the microphone by pressing and releasing the Mute button (confirm by a flashing GREEN LED).

4. To turn microphone off, return the microphone unit to the Charger Base or press and hold the Mute button for ~10 seconds until the LED turns solid RED and release button.

If the microphones are placed too far from the Base Station (~100 feet or 30 meters) the connection will be dropped (LED flashes all colors) and the microphone will mute. After 15 seconds the microphone will beep 5 times, and will continue beeping every 30 seconds to indicating it's out of range.

Move the microphone closer to the Base Station and the connection will automatically be re-established to its original state, and the beeping will cease. If not, the microphone will continue beeping until it turns off in about 15 minutes.

## Using the HD Uni-Directional Tabletop Wireless Boundary Microphones

The HD TableTop Wireless Microphone, shown below, is designed to provide optimum coverage when placed on a conference room table in front of one or two people.
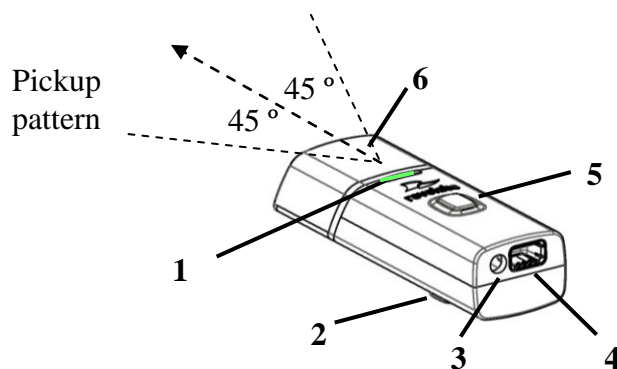
1. LED display — visual status for mute, un-mute, and pairing.
2. Rubber feet — non-slip, vibration absorbing pads.
3. Audio jack — accepts a 2.5mm plug.
4. Charging port — docks to Solo Charger Bases.
5. Mute button — press to mute, un-mute and pair microphone.
6. Acoustic Cover — protects microphone element (non-removable).

To use the HD Directional TableTop Microphone:

1. Remove the microphone from the Charger Base to turn on and automatically mute the mic (indicated by a flashing RED LED) during placement on the conference table.

2. Directional TableTop microphones should be located on the table with the acoustic cover pointed toward the users, trying to keep the microphone 2 to 5 feet (0.6 to 1.5m) from the target person or two. The pickup pattern for this directional microphone is ~+/- 45º to either side of directly in front of the microphone. It is always better to be as close to the person speaking as possible, but avoid placing the microphone where it might be blocked by equipment or paperwork. Avoid placing microphones too close to an audio or video conference speaker to avoid echoes. Make sure that the microphone is always placed lying on its rubber feet atop a flat surface.
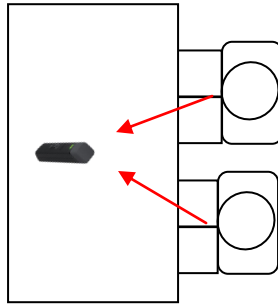
3. With the microphone in position, un-mute the microphone by pressing and releasing the Mute button (confirm by a flashing GREEN LED).

4. To turn microphone off, return the microphone unit to the Charger Base or press and hold the Mute button for ~10 seconds until the LED turns solid RED and release button.

If the microphones are placed too far from the Base Station (~100 feet or 30 meters) the connection will be dropped (LED flashes all colors) and the microphone will mute. After 15 seconds the microphone will beep 5 times, and will continue beeping every 30 seconds to indicating it's out of range.

Move the microphone closer to the Base Station and the connection will automatically be re-established to its original state, and the beeping will cease. If not, the microphone will continue beeping until it turns off in about 15 minutes.

Using the HD XLR Microphone Wireless Adapter

The HD Universal Wireless Adapter for Handheld Microphones, shown in the following figure, is connected to your existing handheld dynamic microphones for wireless freedom during open mic meetings, Q&A sessions, classrooms, etc.
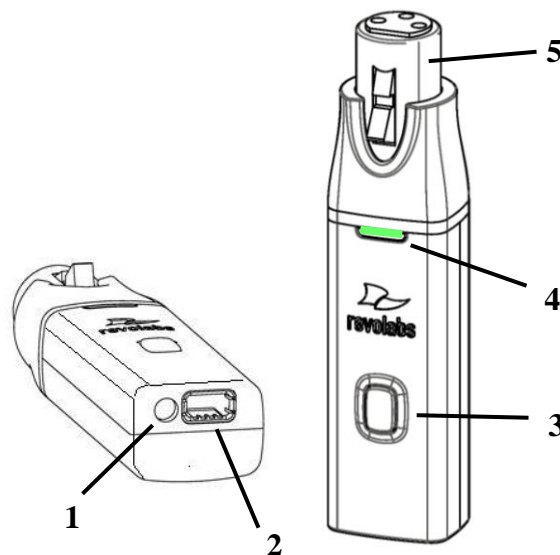

1. Audio Out port — accepts the 2.5mm plug for the earpiece.
2. Power/Charging Port — docks to all Solo Charger Bases.
3. Mute button — press to mute, un-mute and pair microphone.
4. LED display — visual status for mute, un-mute, and pairing.
5. XLR Female connector — balanced audio for dynamic microphones.

To use the HD Universal Wireless Adapter:

1. Remove the Microphone Adapter from the Charger Base.

   The adapter turns on and mutes automatically when removed from Charger Base (flashing RED LED). The XLR Microphone Adapter is attached to a standard dynamic microphone to convert it from a wired microphone to a wireless microphone (see following figure).
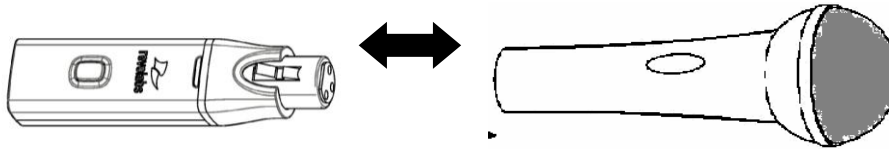
   The Adapter does not provide phantom power or bias current so it cannot be used with condenser or electret microphones.

2. With the microphone attached, un-mute the Adapter by pressing and releasing the Mute button (confirm by a flashing GREEN LED).

   Note: *If the microphone has an on-board mute switch, this switch must also be un-muted prior to use.*

3. To turn the Adapter off, return the microphone unit to the Charger Base or press and hold the Mute button for ~10 seconds until the LED turns solid RED then release button.

   Important: Always remove the microphone from the Adapter by pressing the latch switch and separating the parts before returning the Adapter to the Charger Base.

If the Adapter is moved too far from the Base Station (~100 feet or 30 meters) the connection will be dropped (LED flashes all colors) and the audio will mute. After 15 seconds the microphone will beep 5 times, and will continue beeping every 30 seconds to indicate that it is out of range.

Move the XLR Adapter closer to the Base Station and the connection will automatically be re-established to its original state, and the beeping will cease. If not, the XLR Adapter will continue beeping until it turns off in about 15 minutes.

Pairing Wireless Microphones to Base Station

Pairing creates a link between the HD wireless microphone and the Base Station, with a unique electronic serial number. When the microphone and Base Station have been previously paired, the mic will automatically try to connect to the same Base Station whenever it is lifted from the Charger Base.
Note: *Microphones in new systems must be paired to the Base Station with each microphone assigned to a unique channel on the base unit.*

Remember, microphones are always muted (flashing RED LED) when they are removed from the Charger Base and the Mute button needs to be pressed to make it "live" (flashing GREEN LED).

A microphone that is not paired will be indicated by a cycling RED-GREEN LED pattern. A Base Station channel that is not paired to a microphone will not show any activity on the channel LED (make sure unit is first powered on by observing GREEN backlit front panel display).

When channels are paired, both microphone and channel LEDs will flash RED as microphones are removed from the Charger Base and flash GREEN when un-muted. Remember that only one microphone can be paired to any single Base Station channel.

To pair the microphone to the Base Station:

1. Turn the microphone OFF (no LED activity). If the microphone is ON, press and hold the Mute button for 10 seconds until the LED turns solid RED then release the button to turn the unit off. (do not release the button when you hear two beeps).

2. Place the microphone unit into pairing mode by holding the Mute button down for seven seconds. The LED will turn solid RED. Release the Mute button. The microphone is now in pairing mode.

3. Within one minute, push and hold the button for the desired channel on the Base Station for seven seconds until the LED turns solid red then release. The LED for that channel will be solid red until pairing starts, as indicated by a quick GREEN flash, then switching to flashing RED on both the microphone and the Base Station (muted audio). Pairing is now complete.
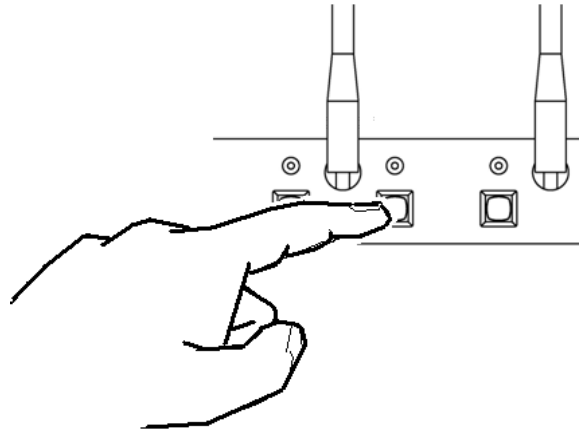
Revolabs Executive HD Charger Base

When Microphones are not in use, they should be properly inserted into the Executive HD Charger base. It is important to ensure that all system microphones are inserted fully in the base so that charging will occur. Features of the base are shown in the following figure.
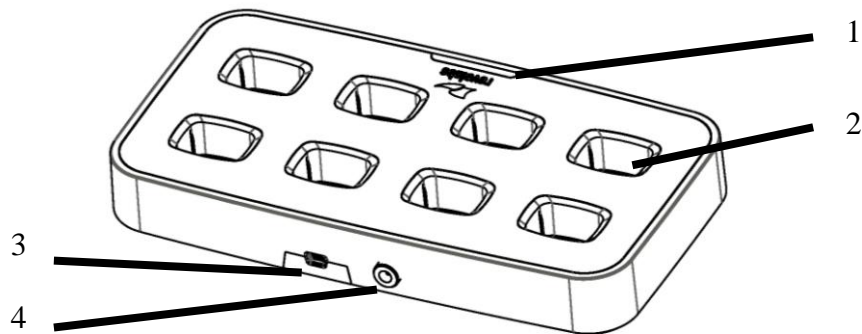
1. **LED indicator** — power status indicator.
2. **Charger Bays** — charges up to 8 Microphones.
3. **Mini USB Interface** — computer serial interface for firmware upgrades to the microphones (on rear)..
4. **Power Cord Receptacle** — power supply input , 9-24VDC (on rear).

Power Module

The Charger Base requires 9-24VDC power, provided by the AC Adapter. Plug the supplied AC adapter into an appropriate power outlet 110-240 AC, 50-60Hz. The power LED on the Charger Base will illuminate.

Charging the Microphone Batteries

First-time use — Before using the wireless microphone the first time, charge the batteries in the microphones for eight hours (or overnight) in the Charger Base.

Recharging — When the YELLOW LED starts to flash intermittently on the microphone the battery has 30 minutes of charge remaining. Over time (years), batteries gradually wear down and require longer charging times. This is normal. Always return microphones to the Charger Base when not in use.

Important: *The Lithium Polymer rechargeable batteries that power the microphones are not user serviceable. Please contact Revolabs (www.revolabs.com) or your AV service provider for replacement instructions and to assure the proper disposal method is used.* ***Warning: Never dispose of batteries in a fire because they may explode.***

Either a solid RED LED (charging) or solid GREEN LED (100% charged) will appear to confirm that the microphone is inserted properly in the Charger Base. The microphones are not transmitting audio to the Executive HD base station while in the Charger Base. In normal use, batteries should fully charge in about 2 hours, but will "quick-charge" to 80% capacity in approximately 1 hour and 20 minutes. Fully charged microphones left in the Charger Base remain solid GREEN.

Updating the Revolabs HD^{TM} Firmware

Executive HD Systems are field upgradable for the firmware portion of the Base Station and microphones. The firmware must be sent to the Base station and microphone separately using the HD Control Panel program.

Updating the Executive HD Base Station
The Executive HD Base Station firmware can be changed using the Revolabs HD Control Panel program. Communication to the Base Station is done over an Ethernet connection.
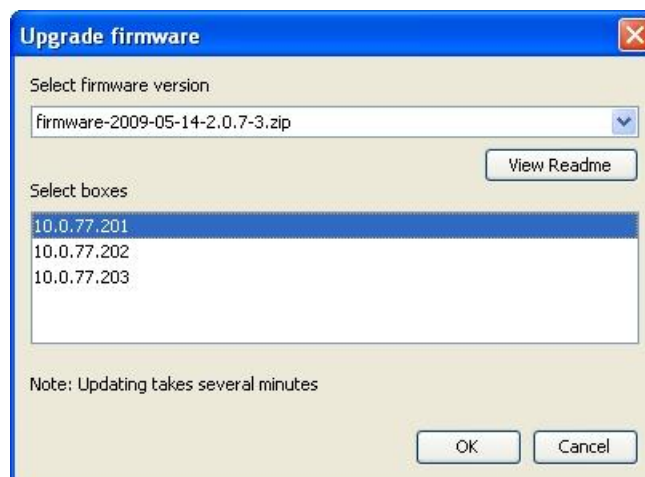
1. Connect to the Base Station(s) as described in *Using the Revolabs HD Control Panel Software Interface*.
2. Select 'Update Firmware' in the firmware menu.
3. Select the desired firmware version from the menu in the pop-up window.
4. Select the Base Station(s) that you would like to update.
5. Select OK and watch the firmware process either on the Base Station front panel display or in the 'monitor' tab in the Revolabs HD Control Panel program. The HD Control Panel will notify you when the process is complete.

Note: *You cannot update a 'Primary' and 'Secondary' Base Station at the same time. Only Base Stations set to the same mode can be updated collectively.*

Updating the HD Microphones
The HD Microphone firmware can be changed using the Revolabs HD Control Panel program and the HD Charger Base. Communication to the Charger Base is done over a mini-USB connection.
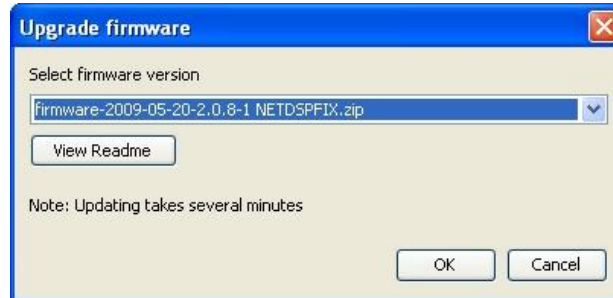
1. Connect the Mini-USB cable from the back of the Charger Base to your PC.
2. Place all microphones in the Charger Base and wait for a solid GREEN or RED LED on each microphone.
3. Start the Revolabs HD Control Panel.
4. Select 'Update Mics' from the 'Charger Base' menu.
5. Select the desired firmware version from the menu in the pop-up window.
6. Select OK. All mics will turn off and you will start seeing RED LED activity on the Charger Base. Wait for all mics to update and the Charger Base LED indicator to return to solid GREEN.

Revolabs Executive HD ™ Indicator LEDs

The following tables show activities associated with the various states shown by the LEDs:

Equipment Use	Microphone LED	Base Station Channel LEDs	Meaning
Microphone in Charger Base	Solid RED	OFF	Charging in Progress
	Solid GREEN	OFF	Charging Complete
Microphone not in Charger Base	OFF	OFF	Microphone powered OFF or battery discharged
	Two RED flashes every 1.5 seconds	Two RED flashes every 1.5 seconds	Microphone paired and muted
	GREEN flash every 1.5 seconds	GREEN flash every 1.5 seconds	Microphone paired and "live"
	Solid RED	Solid RED	Pairing mode or confirmation of powering-down.
	Alternating slow GREEN and RED	Alternating slow GREEN and RED	Microphone or channel not paired
	YELLOW flash alternating with GREEN	GREEN Flashing	Microphone low battery (mic live)
	YELLOW flash alternating with two RED flashes	RED Flashing	Microphone low battery (mic muted)
	Alternating RED, YELLOW, GREEN	OFF	Searching for a connection, or out of radio range. The Microphone will try to re-establish the link for about 15 minutes, and then turn off automatically.
	Rapid RED flashes continuing for more than a few seconds	OFF	Radio congestion – it is not possible to make a radio connection because there are already too many nearby users, or there is heavy radio interference. Possibilities include some types of digital wireless devices or other Revolabs installations.
	Groups of five rapid RED flashes	OFF	Unit is faulty. Contact your AV service provider for advice.

Warranty

Revolabs, Inc. warrants this product to be free of manufacturing defects. Repair or replacement of any defective part or unit (at the discretion of the Seller) will be free of charge for the period of one year.

Any attempt by the user to alter the equipment, or equipment damaged by negligence, accident, or Acts of God voids this warranty.

The Seller shall not be liable for any consequential damage resulting from the malfunction of this product. Should the user experience unsatisfactory performance from this equipment, contact the Seller to obtain instructions for return, or replacement, as deemed necessary.

This warranty is not transferable by the original end user.

<div align="center">

Revolabs, Inc.
63 Great Road
Maynard, MA 01754
www.revolabs.com
800.326.1200

</div>

Specifications

Dimensions, (L, W, H) and Weight:

Executive Base Station 16.9" (43.03 cm) x 8.0" (20.32 cm) x 1.7" (4.42 cm), 6.5 lbs (2.95 kg)

Charger Base 8.3" (21.1 cm) x 4.3" (10.9 cm) x 1.0" (2.56 cm), 1.0 lb (0.45 kg)

Wireless Microphones Wearable: 0.9" (2.3 cm) x 0.8" (2.0 cm) x 2.6" (6.6 cm), 0.05 lb (0.02 kg)

TableTop: 1.5" (3.8 cm) x 0.8" (2.0 cm) x 3.3" (8.4 cm), 0.05 lb (0.02 kg)

XLR Adapter: 0.9" (2.3 cm) x 0.8" (2.0 cm) x 4.0" (10.2 cm), 0.05 lb (0.02 kg)

Shipping Weight 12.0 lbs (5.45 kg)

Radio Frequency:

01-HDEXEC 1.92 to 1.93 GHz (UPCS North America)

(and other 01-HD* products)

03-HDEXECEU 1.88 to 1.90 GHz (DECT EU)

(and other 03-HD* products)

Connectors:

Base Station Audio Phoenix (3.5mm) quick connect terminal blocks (8/4 In & Out)

Sync BUS In/Out mini-Phoenix (3.5mm) quick connect terminal block

Diversity Antenna SMA Plug Female Base, Male Antenna (50 ohm)

Control Port DB9 Socket

Ethernet RJ45

Charger Base DC power input port, Mini-USB, Proprietary 4 pin microphone charge jacks

Microphone Proprietary 4 pin charge plugs, 2.5mm mono earplug port (16 ohm)

Power Requirements:

Executive Base Station 100-240V AC, 50-60 Hz, 10W (power cable varies by country)

Charger Base 5V DC, 2 Amps (switching power supply varies by country)

Range: 100' (30 meters) approx. (no obstructions)

Maximum Audio Channels:

In High Definition mode (20Khz audio)

01-HDEXEC 16 channels maximum (2 systems)

01-HDEXEC4 16 channels maximum (4 systems)

03-HDEXECEU 24 channels maximum (3 systems)

03-HDEXEC4EU 24 channels maximum (6 systems)

In Maximum Density mode (12Khz audio)

01-HDEXEC 32 channels maximum (4 systems)

01-HDEXEC4 32 channels maximum (8 systems)

03-HDEXECEU 40 channels maximum (5 systems)

03-HDEXEC4EU 40 channels maximum (10 systems)

Battery: Lithium Polymer, Up to 8 hours approx. talk time

Charge Time: 2 hours approx.

Audio Bandwidth: 50-22,000 Hz or 50-12,000 Hz (selectable)

Security: 128-bit DSAA (DECT Standard Authentication Algorithm) authentication, 64 bit DECT Standard Cipher

Included Accessories: 1 Earpiece with inline volume control and 1 Lanyard per Wearable Microphone

Environmental Requirements:

Temperature   40° to 105° F (5° to 40° C) operating

Humidity   20% to 85%

Index

| Note: | *Microphones must be fully charged and paired to the Charger Base prior to first use.* |