EasyListener2™

216MHz

user guide

230R receiver
330T transmitter
470-2856-119 compact speaker
AT0806 distributed ceiling speaker
AT0664 cluster ceiling speaker

PhonicEar®

contents

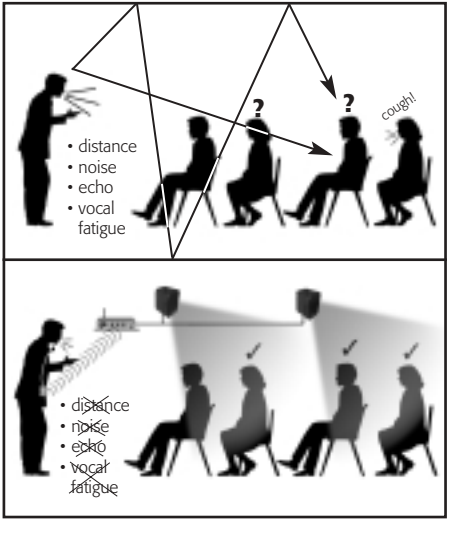
introduction

Congratulations on the purchase of your new EasyListener 2 sound field system! With proper care and use it will become one of your most valuable classroom tools for many years. Students will be able to consistently and easily understand what the teacher is saying, regardless of his/her location in the classroom. Teachers can now speak all day in their normal voice and will suffer far fewer vocal problems as a result.

Numerous studies show that classrooms using sound field enjoy better student comprehension, increased student participation, better grades and fewer behavioral referrals.

Read this manual carefully to become familiar with your system and to get the most out of its many features and options.

understanding sound field and its benefits



without sound field

with sound field

installation tips

Before you set up your system, take a good look around your room. Where are the outlets located? Where are the computers and other electronic equipment? Where can you put your receiver so it's easy for you to reach, but out of the way of students and main traffic areas? Though each classroom is different, there are some general guidelines for both receiver and speaker placement:

The receiver – should be in the front of the classroom at teacher's eye level when standing, close to a wall outlet. Try to keep it at least six feet (19.5 meters) away from computers or other electronic equipment, since there may be interference if it is placed too close to these devices.

Compact wall speakers – should be mounted as high as possible and angled down toward the listeners' ears. Place them around the room so there is even coverage in the listening area (where the students are seated). Use as many as needed – four is recommended.*

Distributed ceiling speakers – space them evenly above the students' seating area. A minimum ceiling height of 10 feet is necessary, and 12 feet is even better. Use as many as needed – a minimum of four is recommended.*

Cluster ceiling speaker – should be centered directly over the students' seating area. A minimum ceiling height of 12 feet is recommended, and 14 feet is even better.

* For optimal speaker placement, download Sound field Wizard software from our website at **www.phonicear.com**.

basic system guidelines

To help ensure that you get the most out of your new sound field system, we have put together the following list of suggested guidelines:

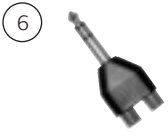
Charge the batteries every night. Rechargeable Nickel Metal Hydride batteries (included with system) last approximately 12 hours between charges, but should be recharged every night so they are ready to go in the morning. Plan on buying new NiMH batteries (only Phonic Ear brand can be used) after 12 months of use. Alkaline batteries can also be used as backups, and will last approximately 15 hours. Alkaline batteries **cannot** be recharged by the system.

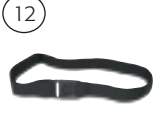
Do not coil the microphone cord. Since it also acts as your antenna, coiling or wrapping the cord will affect its range and may also reduce its life.

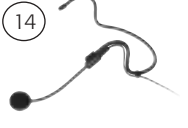
Speak at a normal level – the system is projecting your voice for you.

Periodically check the volume and OptiVoice settings. These are often set and then forgotten, but if accidentally changed, will affect how your system sounds.

basic system package components and accessories

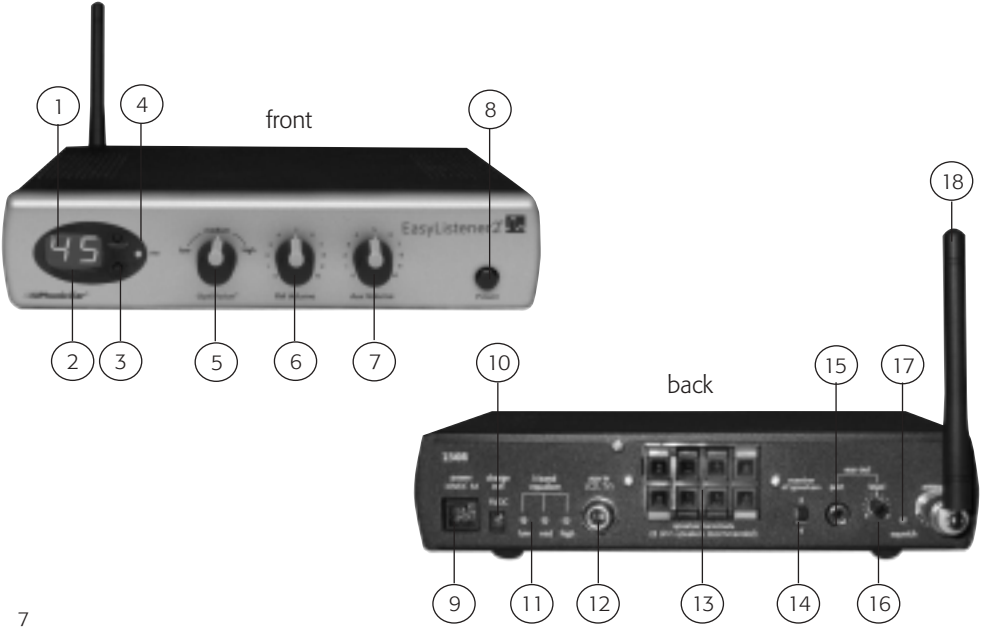






1. 230R base station receiver
2. 330T body-worn transmitter
3. speakers
   (compact wall speaker shown here)
   *speakers packaged separately
4. accessory/transmitter kit
   (841-6440-101)
5. aux out cable/(RCA 3.5mm)
   (AT0805)
6. aux-in adaptor plug /(¼ in – Dual RCA)
   (310-2544-1342)
7. aux-out adaptor plug/(3.5mm – 2.5mm)
   (310-2544-1341)
8. power supply, receiver
   (040-7402-105)
9. power cord, receiver (USA/CAN)
   (AT0787)
10. antenna, receiver
    (AT0831)
11. 330T transmitter charging cord
    (1.3mm – Dual 1.3mm)
    (300-6497-105)
12. elastic belt
    (AT0712)
13. rechargeable AAA batteries
    (374-30-310-09)
14. microphone/(AT0655 boom
    microphone shown here)

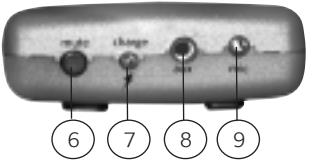
230R receiver features



1. channel display
2. sleep/standby power indicator light
3. channel adjustment button
4. FM receiver signal light
5. OptiVoice™ control
6. FM Volume control
7. aux Volume control
8. power button
9. power cord jack
10. transmitter charge jack (1.3mm)
11. 3-band equalizer adjustment
12. aux in jack (1/4 in)
13. speaker wire terminals
14. number of speakers switch
15. aux out port (RCA)
16. aux out level control
17. squelch adjustment
18. antenna

330T transmitter features

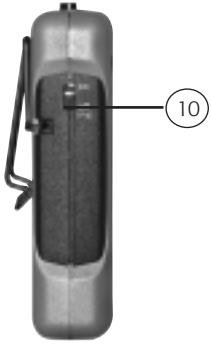
top



front

back

side



1 on/off, low battery and charging indicator light

on = Dim red light

low batt = Blinking light. When light starts blinking there is approximately 1 hour of battery life left.

batt charging = Bright red light

improper charging = No light

2 channel number

3 belt clip

4 serial number

5 battery compartment

6 mute button

7 charging input jack (1.3mm)

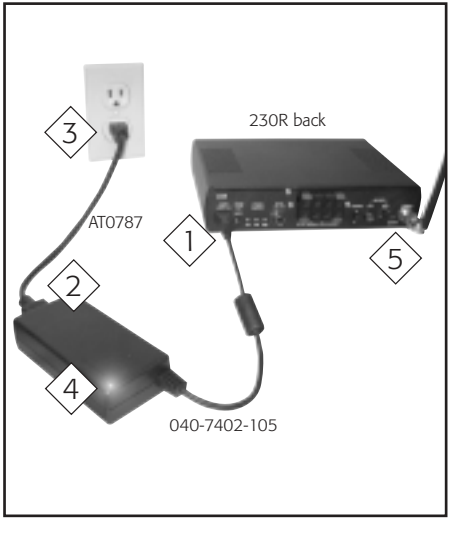
8 auxiliary input jack (3.5mm)

9 microphone input jack (2.5mm)

10 on/off(chg) switch

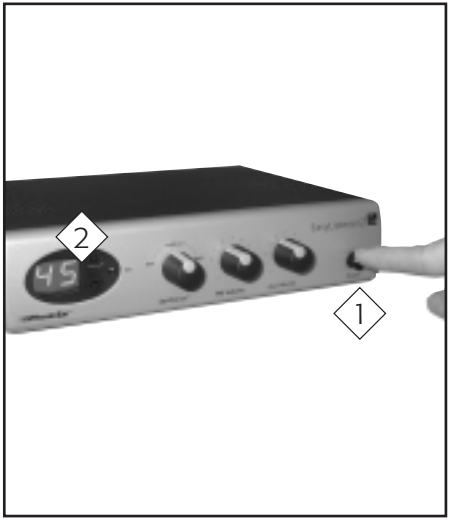
1 230R setup and operation

connecting power to 230R receiver



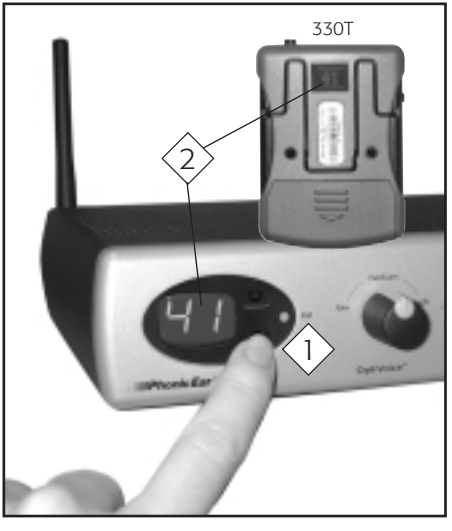
1. Plug power supply (040-7402-105) into **power** port on back of 230R receiver
2. Plug power cord (AT0787) into power supply unit (040-7402-105)
3. Plug power cord (AT0787) into wall socket
4. Check to see that green light is on, indicating that unit has power
5. Attach antenna to antenna port on back of 230R receiver

2 turning on 230R receiver



1. Push **power** button
2. Confirm that LED channel display lights

3 adjusting channel setting



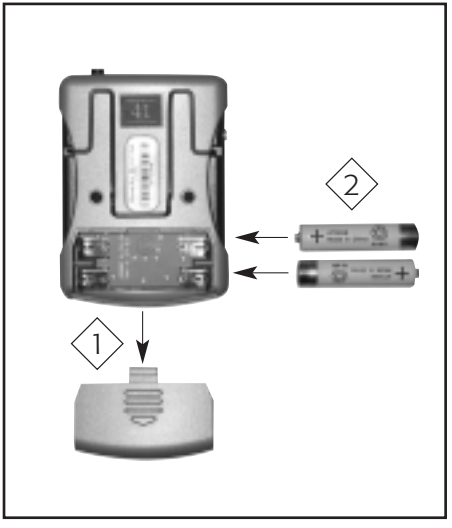
1. Push up or down channel adjustment buttons to set channel on receiver to match transmitter channel

2. Make sure that receiver channel matches transmitter channel

NOTE: There are 19 channels available in the 216MHz frequency. See page 61 for a complete list of Phonic Ear channel numbers and corresponding frequencies.

4 330T setup and operation

inserting batteries



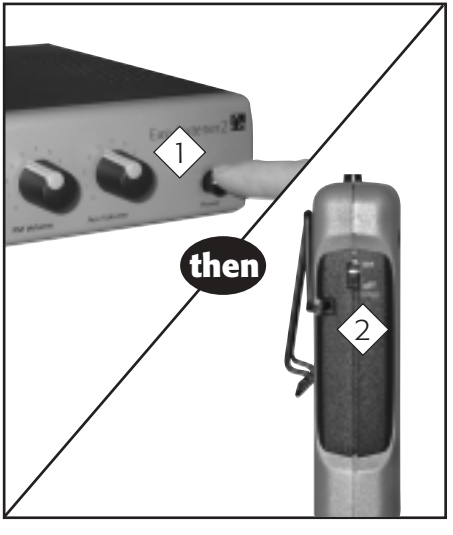
1. Push off battery compartment door

2. Insert rechargeable AAA NiMH batteries included with system (or alkaline batteries) into compartment and replace door. **Check polarity markings to make sure batteries are positioned correctly.**

NOTE: Before the first use, batteries must be charged for 12 hours. After that, we recommend charging for 12 hours every night for up to 12 hours of battery life.

5a charging batteries

Do not attempt to charge alkaline batteries. The fail safe charging system will not allow alkaline batteries to be charged.

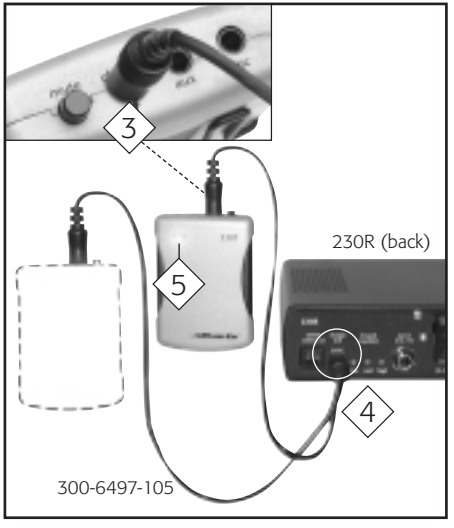


1 Push **power** button to turn 230R receiver off.

NOTE: Sleep/standby power light on receiver will remain lit in off position.

2 Switch transmitter power to **off (chg)** position

5b charging batteries (cont'd)



3 Plug 300-6497-105 charging cord into **charge** jack on top of 330T body-worn unit(s)

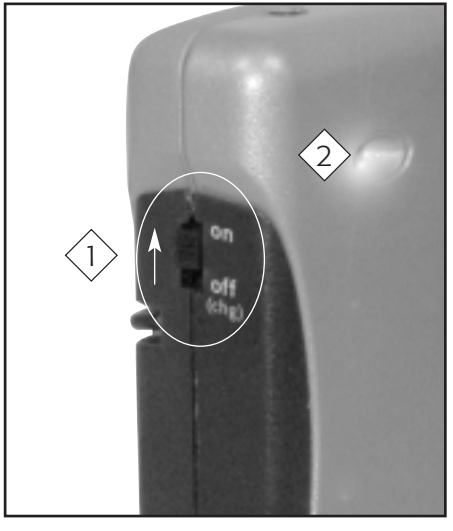
4 Plug 300-6497-105 charging cord into **charge out** jack on back of 230R receiver

5 Confirm that bright red LED display is lit

NOTE: We recommend charging for 12 hours every night for up to 12 hours of battery life.

Charge only rechargeable NiMH batteries from Phonic Ear.

6 turning on 330T transmitter



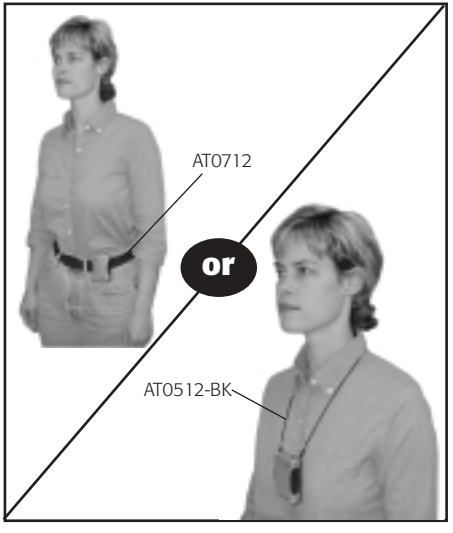
1 Push power switch up to turn transmitter power on

2 Confirm that red indicator light is on

LED indicator light functions:

- **on** = Dim red light
- **low battery** = Blinking light. When light starts blinking there's approximately 1 hour of battery life left.
- **battery charging** = Bright red light
- **improper charging** = No light

7 wearing 330T transmitter



Clip to belt (AT0712), pocket, pants, etc.

or

Attach lavalier (AT0512-BK)* to clip on the back of transmitter

*Lavalier not included with system package

8 plugging in microphone

1. Plug microphone into **mic** jack on 330T unit

2. When wearing microphone, keep antenna/cord as straight as possible. Do not coil.

9 wearing microphone

(there are four microphone styles available for use with the EasyListener 2 system)

★★★★ = most compatible ★ = least compatible

Maximum distance from mic to mouth is 6 in/(15cm); 3 in/(7.5cm) is ideal.

optimum

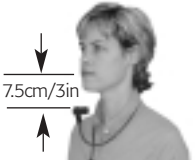
optional

AT0655 boom mic (two wearing options)

★★★★

AT0814 earhook mic

★★★½



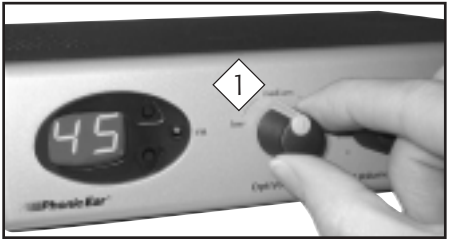
AT0816 collar mic

★★

AT0291-L directional lapel mic

★½

10 adjusting OptiVoice™ setting



1 Set **OptiVoice** switch to **medium**

OptiVoice is a 3-position switch that automatically adjusts the sound quality of the primary speaker's voice. It allows teachers to shape the sound of their voice and helps to ensure maxium speech clarity in low, medium and high noise levels.

low: Recommended for use in low-noise situations and for most natural voice quality.

medium: Recommended for everyday use. Best setting for average classrooms where low-medium noise levels are present.

high: Recommended for use in high noise levels. Helps to ensure top comprehension during critical tasks such as test-taking or hearing impaired instruction.

NOTE: With each increase in level, there is an increase of approximately 3dB in gain (volume). This may require you to decrease your volume setting to avoid potential microphone/speaker feedback.

11 setting FM volume

Follow steps 1 or 2 below to adjust **FM volume** setting to proper level. Two people are needed to set the volume level. It is difficult to hear your own voice and make adjustments to it.

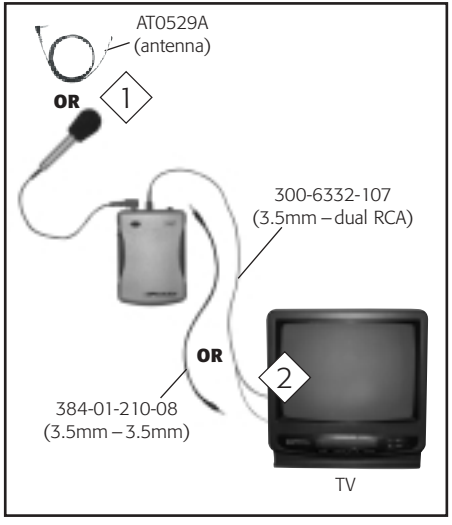
NOTE: The average volume setting is between 4–5, but may change depending on room acoustics and noise level.

1 **With a sound level meter** - Take a level reading in the "A" setting in the center of the room during normal classroom activity, and another reading of the teacher's amplified voice (without the class activity). The level of the teacher's voice should be set between 10-15 decibels above room noise level.

2 **Without a sound level meter** - First, ask someone other than yourself (if you are the teacher) to listen to the amplified voice and make volume adjustments. An ideal volume level is achieved when the listener can hear the amplified voice at a comfortable level and the volume level from the speaker and teacher's mouth is comparable. If you can hear yourself through the loudspeakers, the volume setting is too high and should be decreased

12 330T transmitter aux-in

connecting CD, TV and other audio sources (optional)



The 330T **aux in** jack allows transmission of an external audio source such as a CD player, TV, VCR, or computer.

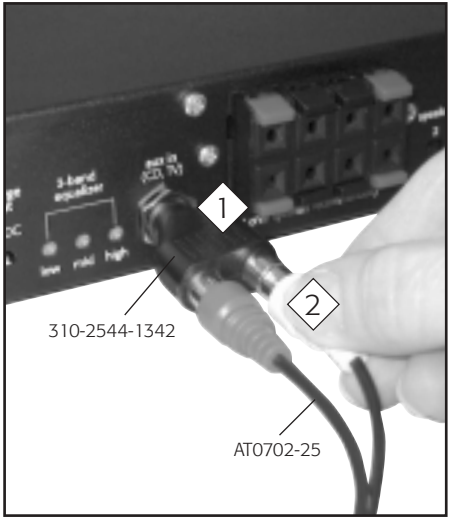
1. Plug in microphone or external antenna (AT0529A)

2. Connect 330T to auxiliary sound source using either the 300-6332-107 cord **or** the 384-01-210-08 cord

NOTE: OptiVoice will affect the sound transmitted through the 330T transmitter. Set the OptiVoice to **low** position for most faithful reproduction of music, etc.

13 230R receiver aux-in

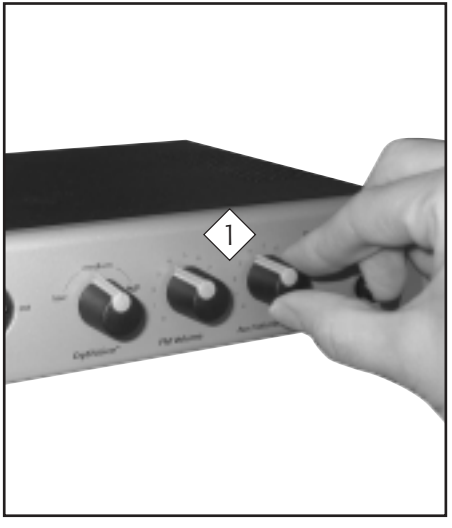
connecting CD, TV and other audio sources (optional)



1. For most connnections from CD player, TV, stereo or other audio sources, insert aux-in adaptor plug (310-2544-1342) into **aux in** port

2. Connect audio source to adaptor plug using AT0702-25 (optional accessory – not included with system. See accessory list on page 55)

14 adjusting aux volume control



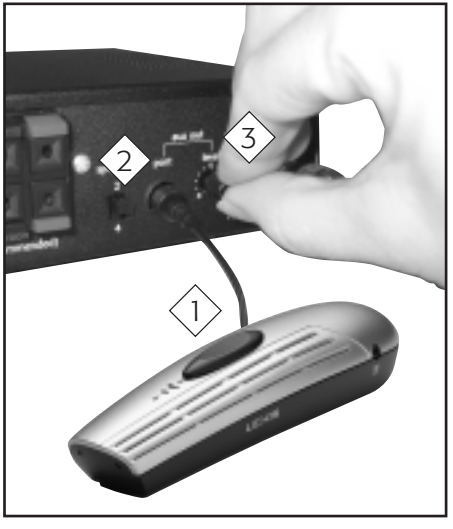
1 Turn **aux volume** control to adjust CD, TV, stereo and other audio sources plugged into **aux in**.

Depending on setup, you may have to adjust volume of external audio source.

NOTE: OptiVoice does not affect **aux** sound.

15a auxiliary output

rebroadcasting to other receivers



The auxiliary output feature allows transmission, or rebroadcasting of the primary teacher's voice directly to a student's personal FM system, regardless of their channel or frequency.

1. Using AT0805 cord, attach 3.5mm end of cord into **aux in** port of transmitter. **NOTE:** (Lexis unit shown here. See chart on next page for list of compatible products and input adaptor plug sizes. Adaptor plug 310-2544-1341 may be required).
2. Using AT0805 cord, attach transmitter to **aux out** port
3. Adjust **level** setting for transmitter using compatibility chart on following page

15b aux out transmitter compatibility chart and level setting guide

NOTE: Common transmitters and recommended level settings are shown below. Because the level control is universal, other transmitters not listed below may be used as well – simply adjust the **aux out** level control until the receiver wearer hears a strong distortion-free signal.

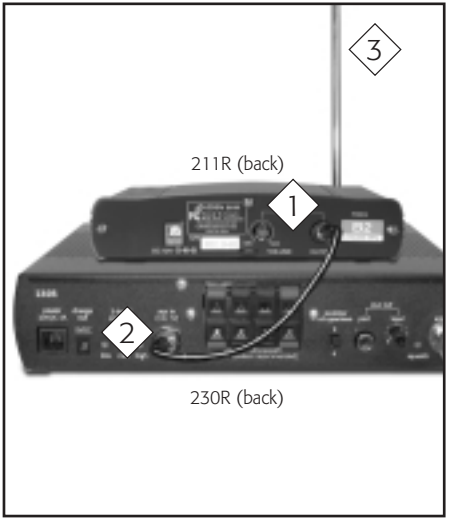
product name/part	aux in jack size	aux out level setting
Easy Listener 330T	3.5mm	2
Sprite 300TS	3.5mm	2
Sprite 300TS-216	3.5mm	2
Solaris 571T	3.5mm	5
Lexis 871T transmitter	3.5mm*	2
Phonak Campus TX5	3.5mm*	2
Phonak HandyMic TX3	3.5mm*†	2
Phonak MicroVox TX2	2.5mm	2

Ouput range: The range of the **aux out** level control is 0V–1.0V_{rms}, linear

* For transmitters with a 3.5mm jack size, simply attach the transmitter to the AT0805 aux out accessory cord. For 2.5mm products, use the aux out adapter plug (310-2544-1341) 

† Requires special adaptor cord provided by Phonak

16a team-teaching with 211 receiver and handheld microphone system

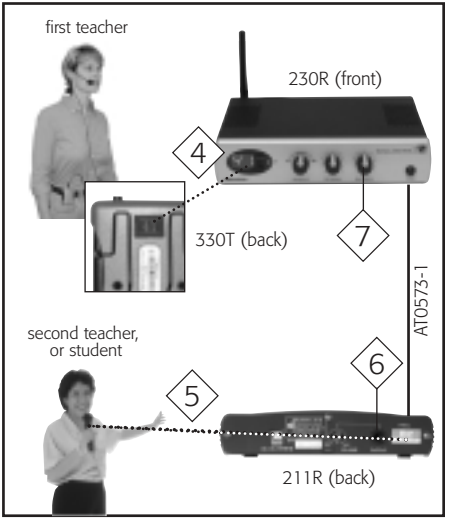


1. Connect one end of the AT0573-1 cable to **Output** jack on back of 211R unit

2. Connect the other end to the **aux in** jack on back of the 230R receiver

3. Extend 211R receiver antenna

16b using 31HT handheld microphone



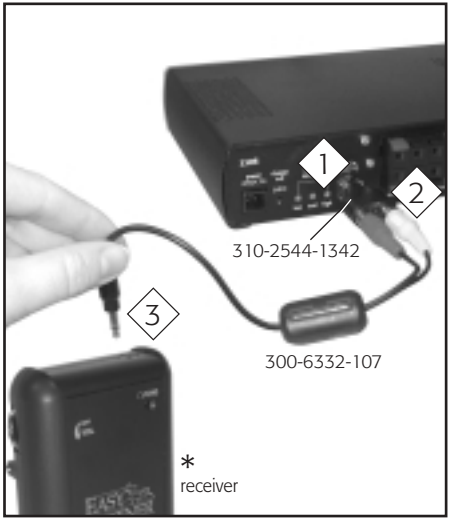
4 Make sure that channel number indicated on front of 230R receiver matches channel number on the back of 330T unit

5 No channel change is necessary on the 211R and handheld mic – they are factory set to match

6 Set **Volume** control on back of 211R to approximately 1/3 of the way to it's highest level setting

7 Adjust the **Aux Volume** control on front of 230R to proper level

17a team-teaching with body-worn personal receiver & transmitter units

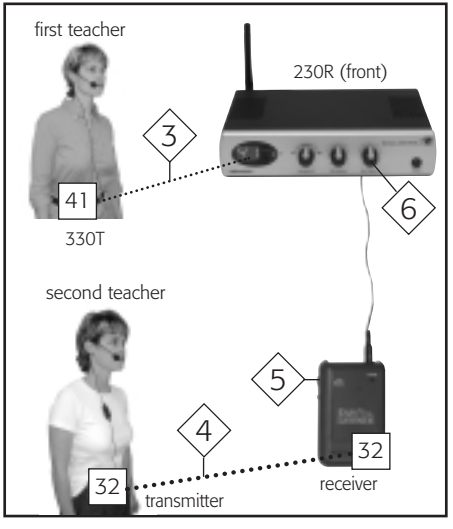


1. Insert aux-in adaptor plug (310-2544-1342) into **aux in** port on back of 230R
2. Connect aux-in adaptor cord (300-6332-107) to adaptor plug. (Match red to red and white to white.)
3. Plug other end of aux-in adaptor plug into **aux** jack on body-worn receiver

* *If a different receiver is used, a different adaptor cord may be required.*

NOTE: Second teacher should be wearing a transmitter on same channel as receiver (see diagram on next page)

17b team-teaching with body-worn personal receiver & transmitter units (cont'd)



3 **First Teacher**
Make sure that channel number indicated on front of 230R receiver matches channel number on the back of 330T unit

4 **Second Teacher***
Make sure that channel number indicated on receiver matches channel number on the transmitter

5 Set volume level on team-teaching receiver to 2/3 max (6-7 out of 10).

6 Set **aux volume** on 230R to comfortable level (usually 4-5).

* Refer to page 32 for channel pair combinations not recommended with a 72MHz system.

17c 72MHz & 216MHz channel pair combinations not recommended for team teaching operation

72MHz band frequency	216MHz band frequency effected
72.025MHz (Ch1)	216.075MHz (Ch42)
72.075MHz (Ch2)	216.225MHz (Ch45)
72.125MHz (Ch3)	216.375MHz (Ch48)
72.175MHz (Ch4)	216.525MHz (Ch51)
72.225MHz (Ch5)	216.675MHz (Ch54)
72.275MHz (Ch6)	216.825MHz (Ch57)
72.325MHz (Ch7)	216.975MHz (Ch60)

possible Phonic Ear transmitter/receiver combinations:

transmitters	300R	571R	575R
300T	•	•	•
300TS	•	•	•
300TS-216			
330T			
571T	•	•	•

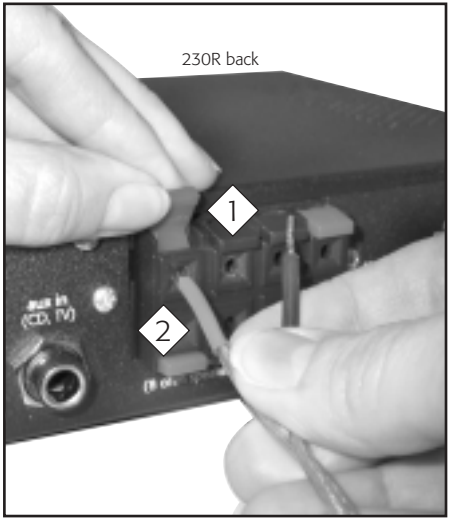
18 transmitters that can be used with 230R receiver

★★★★ = most compatible ★ = least compatible

transmitter	compatible (no adaptor cord required)	performance rating	accessory needed	comments
330T-216 EasyListener 2	✔	★★★★	none	
300TS-216 Sprite	✔	★★★★	none	
Lexis transmitter (as mic)	✔	★★★	✔	a) Lexis requires the use of AT0655 boom mic b) May require use of external antenna for better range (389-02-120-02) c) set microphone to omni mode d) set sensitivity level to high
Phonak Handymic TX3 (as mic)	N/A	N/A	N/A	a) built-in mic has high level of feedback b) requires use of external mic, which the Handymic will not accommodate
Phonak Campus S TX5	✔	★★½	✔	a) omni mic has extreme feedback issues b) recommend use of external boom mic from Phonak
Phonak MicroVox TX2	✔	★★½	✔	recommend boom mic

19 speaker setup

connecting speakers to 230R

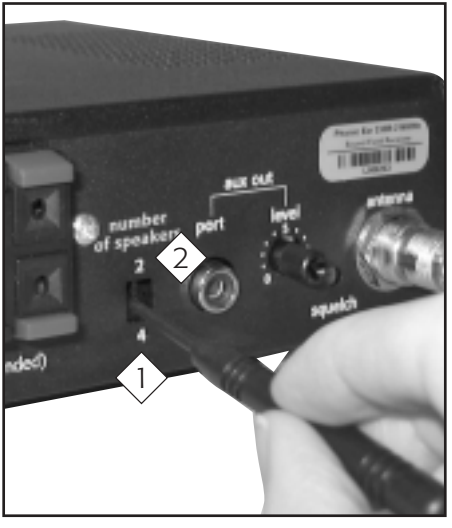


1. Lift speaker cable connector tab

2. Insert exposed cable wire as far as it will go into connector hole (red to red; black to black), then push tab down to secure cable. Pull on cable slightly to make sure connection is secure.

NOTE: Use at least 18 GA Plenum speaker wire (included with system)

20 setting number of speakers

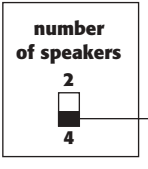


1 Verify **number of speakers** switch is set to **4** if using 4 speakers

2 Set switch to **2** if using cluster ceiling speaker or a 1-3 daisy-chaining speaker configuration

Selecting the proper setting allows for:

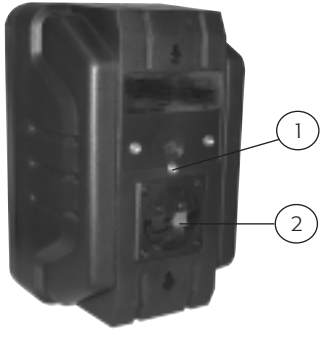
- optimal power distribution and optimal system performance



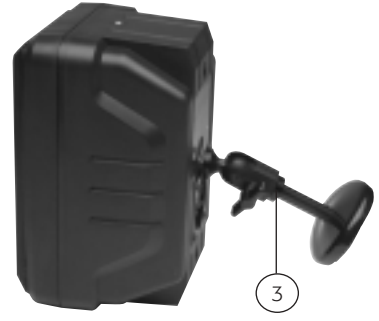
Verify the **number of speakers** switch is set to **4** on back of 230R

470-2856-119 compact speaker features

back



speaker with wall bracket



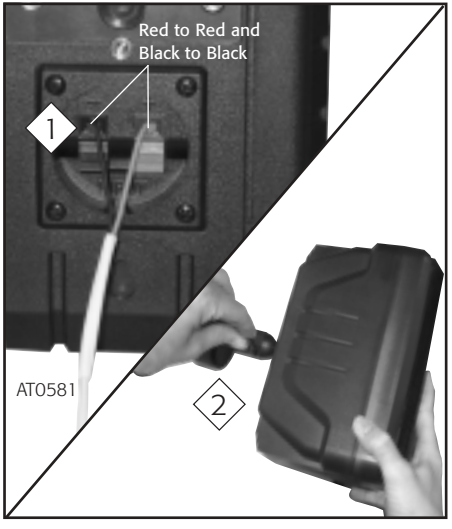
1 bracket mounting hole

2 speaker wire input terminals

3 wall mount bracket (470-7329-103)

Consult bracket mounting guide included with bracket packaging for complete installation instructions.

21 compact speaker hookup and adjustment

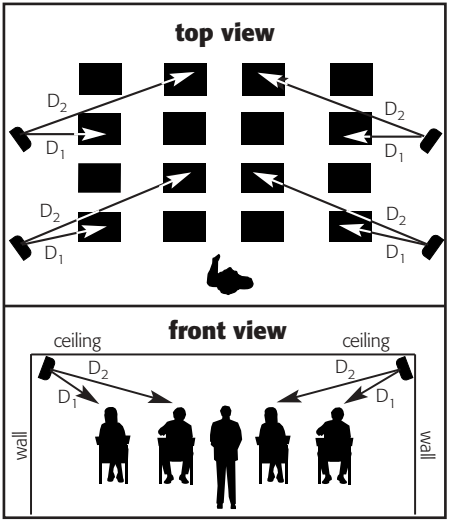


1. Attach AT0581 speaker cable to back of speaker. Insert red-tipped cable into red speaker connector and black-tipped cable into black speaker terminal.

2. Loosen thumb screw on side of bracket to adjust speaker position. Tighten screw to hold speaker in desired position.

NOTE: Pull on cable slightly to make sure connection is secure.

22 where to mount compact wall speakers



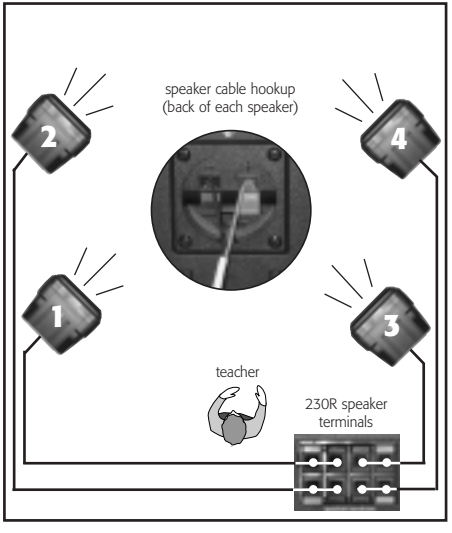
Based on your classroom acoustics and seating arrangement, speaker placement will vary.

- For an average sized classroom, 4 speakers are recommended
- Mount on walls, ceiling beams, or other structure
- Place speakers as high up as possible
- Aim speakers down toward listeners' faces.
- The farthest listener each speaker can serve should be less than twice as far away as the closest listener. ($D_2 < 2D_1$ in diagram)

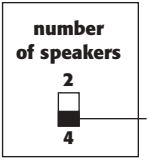
For optimal speaker placement, download our **sound field wizard** software from our web site at **www.phonicear.com**.

23a standard four-speaker setup

For other speaker connection options, see page 49



- For average-sized rooms (30 x 30 ft)



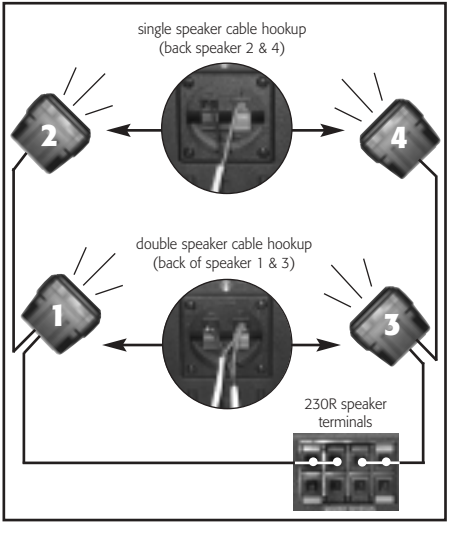
Verify the **number of speakers** switch is set to **4** on back of 230R

- Sound will not come through until all speakers have been hooked up.

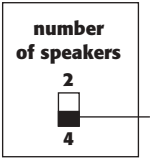
NOTE: When installing compact wall or ceiling speakers, keep cord flush to wall and away from foot traffic.

23b standard four-speaker daisy-chaining option

For advanced speaker connection options, see page 49



- Daisy-chaining allows setup with shorter cable lengths
- For optimum performance, daisy chain speakers in pairs: e.g. speakers 1-2, then 3-4 rather than 1-2-3-4 separately

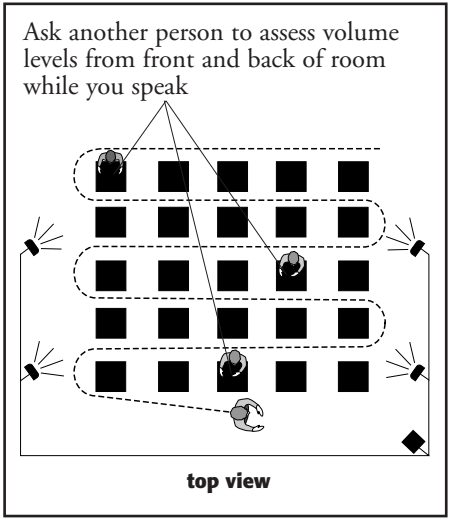


Verify the **number of speakers** switch is set to **4** on back of 230R

NOTE: Be sure to plug one speaker set on right, and one speaker set on left side of terminal.

24 walk, talk, and listen to quality

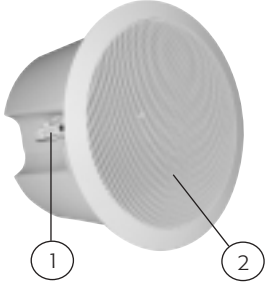
(Initial setup only; reposition speakers if necessary.)



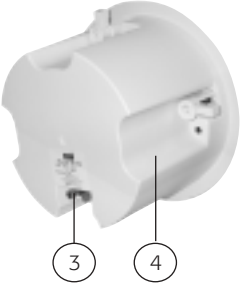
- Make certain that speakers are angled down toward student seating area.
- Adjust **FM volume** setting as necessary

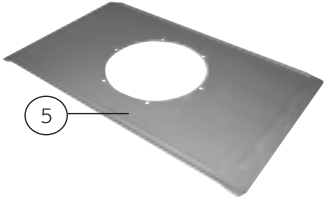
AT0806 distributed ceiling speaker features

front



back





NOTE: Tile bridge must be used with acoustic drop ceiling installations. See instruction sheet enclosed with ceiling speakers for complete installation instructions.

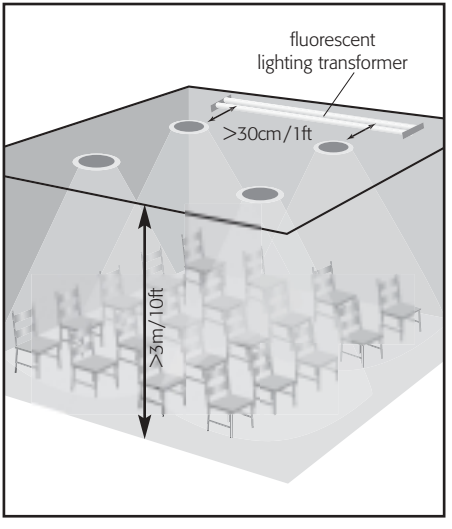
1. mounting tabs
2. speaker grill
3. speaker input terminals
4. attached speaker back enclosure (back can)
5. 470-7347-106 metal tile bridge

25 attach speaker wires

Attach the speaker wires to the speaker terminals by pressing in each compression terminal to reveal an “eye”, inserting the wire, and releasing the terminals to lock the cable in place.

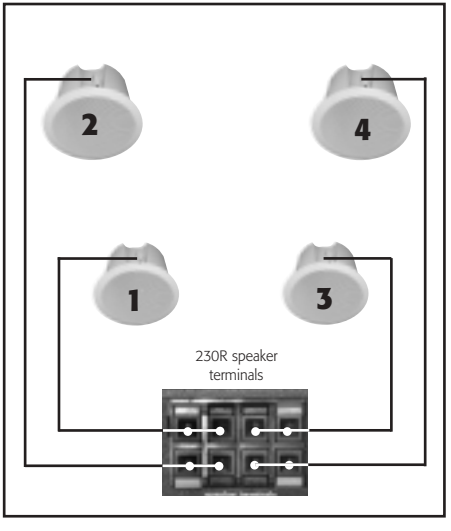
NOTE: Connect red to red and black to black.

26 where to mount distributed ceiling speakers



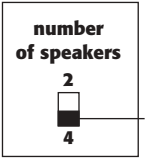
- Space speakers evenly over listening area
- >3m/10ft minimum ceiling height recommended
- >30cm/1ft distance from fluorescent lighting transformer is recommended

27 distributed ceiling speaker wire hookup



- Wiring should go above ceiling tile

NOTE: Use at least 18 GA Plenum speaker wire included with system.

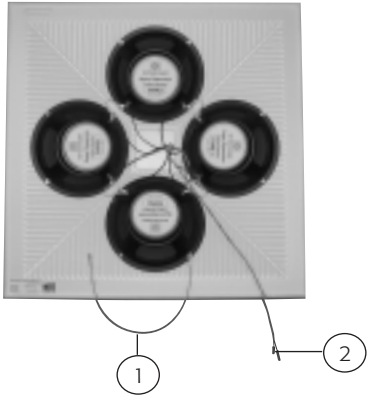


Verify the **number of speakers** switch is set to **4** on back of 230R

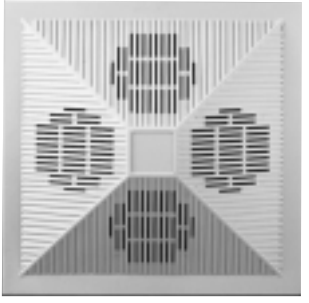
NOTE: Sound will not come through until all speakers have been hooked up.

AT0664 cluster ceiling speaker features

top



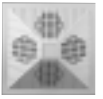
bottom

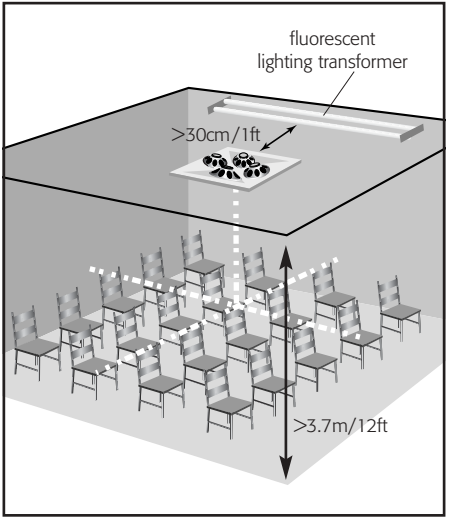


1 safety wire

2 speaker cable crimp connectors

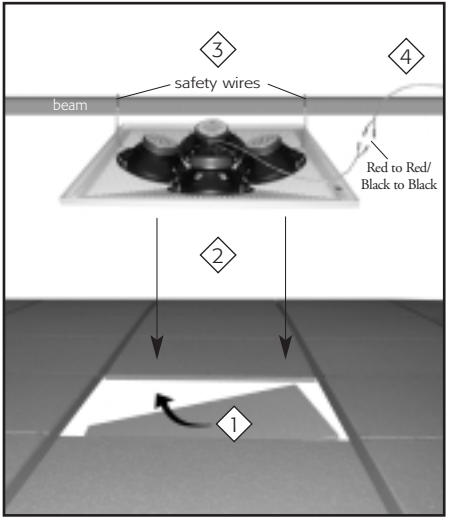
28 where to mount cluster ceiling speaker



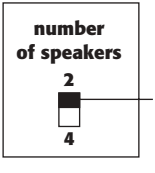


- Center speaker over listening area
- >3.7m/12ft minimum ceiling height is recommended
- >30cm/1ft distance from fluorescent lighting transformer is recommended

29 cluster ceiling speaker setup



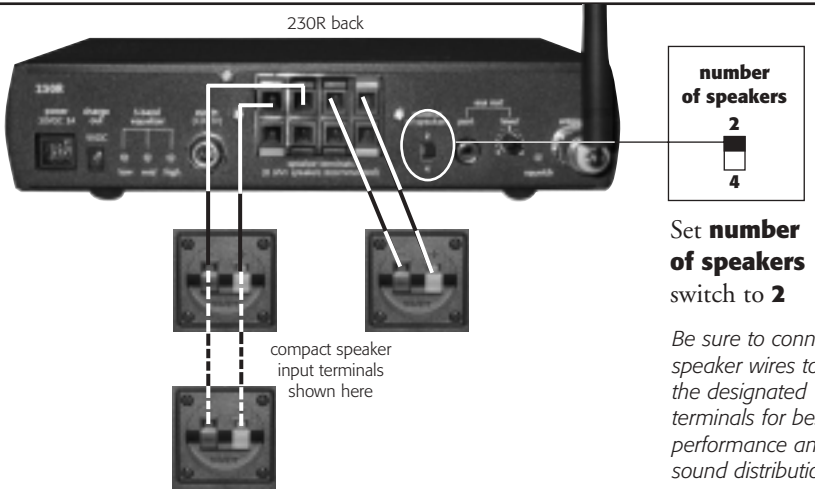
1. Remove 60 x 60 cm/2 x 2 ft ceiling tile
2. Lower speaker into space
3. Secure safety wires
4. Connect and crimp speaker cable (run cable along wall)



Set **number of speakers** switch to **2** on back of 230R

30a advanced system setup

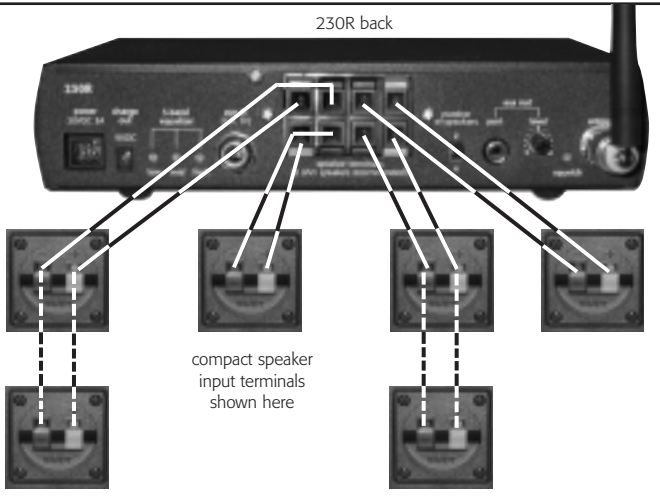
daisy-chaining with 3 speakers

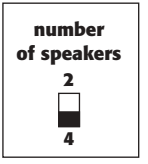


Set **number of speakers** switch to **2**

Be sure to connect speaker wires to the designated terminals for best performance and sound distribution

30b daisy-chaining with 6 speakers

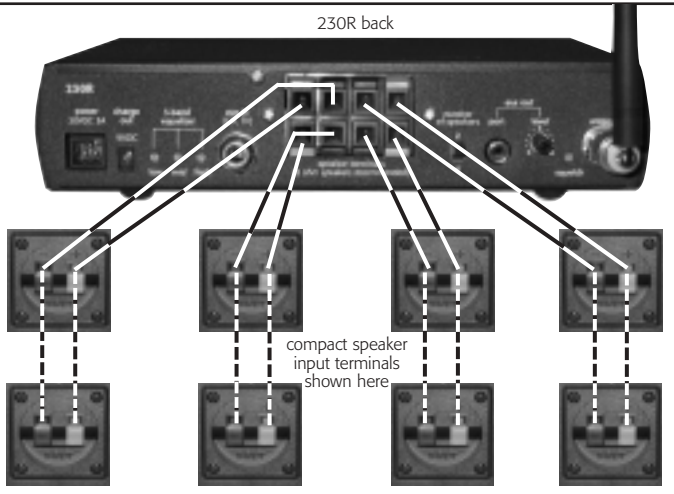


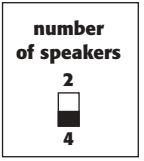


Set **number of speakers** switch to **4**

Be sure to connect speaker wires to the designated terminals for best performance and sound distribution

30c daisy-chaining with 8 speakers





Set **number of speakers** switch to **4**

Be sure to connect speaker wires to the designated terminals for best performance and sound distribution

31 adjusting 3-band equalizer
(This setting should be adjusted by sound professionals ONLY)

ATTENTION: If you are not a sound professional, we do not recommend that you alter the 3-band equalizer settings.

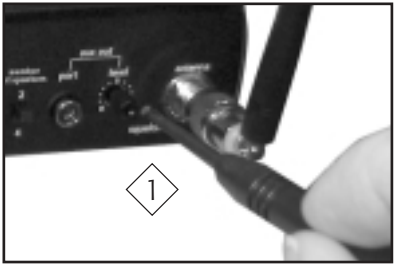
1 Use screwdriver to adjust the **low**, **mid** and **high** settings. Turn to the right to add base, mid and high tones. Turn left to decrease.

A properly adjusted equalizer optimizes the system's sound quality and reduces feedback.

Making improper adjustments could result in a degradation in sound quality and performance.

32 adjusting squelch

(This setting should be adjusted by sound professionals ONLY)



1. Using a screwdriver turn the control slightly to the left (counter clockwise) to increase the system's range and to the right (clockwise) to decrease the system's range.

The squelch setting increases or decreases the system's range by disabling the receiver audio when the transmitter signal is below the threshold point. It also allows the ability to re-use a channel, provided that systems coverage area is installed more than 200ft apart (indoors). For best results, ask someone to help you by wearing the transmitter and walking away from the base station receiver towards the perimeters of the room. When you begin to hear noisy static, you know you've reached the system's internal range limits. Increase or decrease the range slightly, and re-test by repeating this step. (In most cases the system's range will go well beyond the typical classroom.)

If noise or signal interference persists, make sure systems in adjacent classrooms are turned off. Re-test range and set squelch for the minimum system range to reduce external interference. Contact Phonic Ear Service if extra assistance is required.

optional accessories (not included with system)

microphone styles

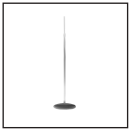
AT0655
behind-the-neck
boom microphone

AT0814
earhook microphone

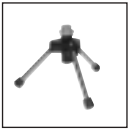
AT0816
FM collar microphone
with mute switch

AT0291-L
directional microphone
with lavalier cord

speaker accessories



AT0579
speaker floor stand
(requires AT0582
stand adaptor)



AT0579-T
table-top stand
(requires AT0582
stand adaptor)

transmitter accessories

AT0749
wall transformer/
charger for 330T

AT0512-BK
lavalier cord

receiver accessories

AT0801
aux-box (adds four
additional audio
inputs)

211
wireless microphone
system for team-
teaching and student
pass-around use

optional accessories (not included with system) cont'd

auxiliary input adaptor cords

384-01-210-08
aux-in adaptor cord (3.5mm–3.5mm) 330T to external audio, TV, VCR, DVD, computer, etc.

AT0702-25
aux-in adaptor cord (dual RCA–dual RCA) 230R to external audio, TV, VCR, DVD, etc.

300-6332-107
aux-in adaptor cord (3.5mm – dual RCA) 330T to external audio, or team-teaching

AT0529A
antenna (for use with auxiliary input only)

no FM reception (green FM indicator light on front of receiver is not on)

- Verify the receiver is turned on
- Verify the transmitter is turned on (note that red LED indicator light will be dim red)
- Verify the frequency number on the receiver matches the frequency number on 330T transmitter
- Verify transmitter batteries have been charged
- Verify batteries are inserted properly
- Verify that receiver antenna is connected

weak sound from speaker(s)

- Make sure AT0655 boom microphone (or other microphone) is being worn correctly
- Increase FM and/or Aux Vol control
- Reposition the microphone closer to the speaker's mouth
- Check that none of the speakers are blocked or covered
- Verify that the speaker wires are properly connected to 230R speaker terminals (reinsert each one deep into terminal socket)
- Reposition speakers closer to the listeners

receiver is receiving a signal but no sound is coming from speaker

- Verify microphone is connected properly to transmitter and is working correctly
- Confirm that transmitter mute switch is in off position (un-depressed)

feedback from speaker(s)

- Turn down the volume on the 230R receiver
- Reposition mic closer to mouth
- Make sure the person wearing the transmitter is not too close to the speaker(s)
- Make sure AT0655 boom microphone (or other mic) is being worn correctly

speaker(s) is picking up FM interference or hum

- Check to make sure no other wireless systems are operating on similar frequencies
- Check to make sure the system is placed more than 6ft from a computer
- Check to make sure metal objects are not placed too close to transmitter or speaker(s) (i.e. jewelry, metal shelves)

cleaning

Clean as needed, using a soft, damp cloth.

other important notes

- Protect your sound field system from excessive moisture, heat, and mechanical shocks.
- Clean with a soft damp cloth and remove the batteries from the transmitter. Place the system into the accessory/transmitter kit.
- The case bottom and top of the 230R and the 040-7402-105 receiver power supply can get warm under normal operation.
- To protect the transmitter's case front, position it face down on a soft surface when removing or inserting the batteries.
- Always dispose of old batteries in approved battery recycling bins. It may be illegal to dispose in the trash. If you are not sure of proper disposal method, please consult your local authority.

EasyListener 2 channel numbers and corresponding frequencies

channel number	frequency	channel number	frequency
41	216.025	51	216.525
42	216.075	52	216.575
43	216.125	53	216.625
44	216.175	54	216.675
45	216.225	55	216.725
46	216.275	56	216.775
47	216.325	57	216.825
48	216.375	58	216.875
49	216.425	59	216.925
50	not available	60	216.975

product specifications

base station receiver: 230R

receiving frequency	216MHz, synthesized (U.S./Canada)
frequency stability	±500Hz 0° to 50° C
modulation	FM narrow-band
AF frequency response	20Hz - 20kHz, -3dB (Aux in) 70Hz - 10kHz, -3dB (FM in)
power output	14W into 8Ω/28W into 4Ω
auxiliary input level	300mV$_{rms}$ (-10dBV) 0.25in stereo
auxiliary output	0-1V$_{rms}$ adjustable via rear panel, RCA
aux input impedance	47kΩ
FM signal-to-noise	> 63dB, A weighted
THD	< 3% @ 1kHz maximum output
nominal deviation	±5kHz
maximum deviation	±10kHz
squelch	RSSI-type
squelch level	adjustable via rear panel
power supply	20VDC @ 3A
charge port	5VDC, 200mA

user controls (front)	on/off, FM volume, Aux volume, OptiVoice, channel up/down
installer controls	3-band equalizer, squelch, speaker configuration selector
displays	2 digit channel LED display and LED for “FM signa”
dimensions (WXHXD)	21.9 x 5.4 x 16.2 cm/ 8.6 x 2.1 x 6.4 in
weight	1.11kg/2.45lb
case	steel, powder coat finish

product specifications (cont'd)

transmitter: 330T

transmitting frequency	216MHz, crystal controlled (U.S./Canada)
modulation	FM narrow-band
operating range	up to 50m/160ft
user controls	off/on push button mute switch
inputs/outputs	3.5mm auxiliary input jack 2.5mm microphone input jack 1.3mm charge jack
battery life	15Hr (AAA alkaline) 12Hr (AAA NiMH)
dimensions (WXHXD)	5.9 x 8.2 x 2.0 cm/ 2.3 x 3.3 x 0.8 in
weight	74.8g/2.64oz (with batteries)
case	ABS plastic, painted
battery/power/ charge LED	on (dim): power on flashing: low battery – 1 hour life remaining on (bright): charging

compact speakers: 470-2856-119

speaker type	Bass reflex; 8.9cm/3.5in woofer 2.5cm/1in soft-dome tweeter
impedance	8Ω nominal
continuous power	30W
peak power	80W
frequency response	65Hz to 20kHz -10dB
dimensions (WXHXD)	12.7 x 22.2 x 14cm/ 5 x 8.75 x 5.5 in
weight	1.75kg/3.86lbs
mounting	wall mounting brackets provided (tabletop/floor stands also available)
speaker wire	AT0581 7.3m/24ft, 14.6m/48ft, and 18.3m/60ft lengths available
sensitivity	88dB, 1W @ 1m

product specifications (cont'd)

distributed ceiling speaker: AT0806

speaker type	coaxial: 6in woofer, .5in tweeter
impedance	8Ω nominal
sensitivity	90dB, 1W @ 1m
continuous power	35W
peak power	70W
frequency response	65Hz to 20kHz
dimensions (DIA X D)	203 x 5.7 cm/9 x 2.25 in
weight	1.1kg/2.4lbs
mounting	acoustic ceiling metal tile bridge (470-7347-106)
speaker wire	AT0581 7.3m/24ft, 14.6m/48ft, and 18.3m/60ft lengths available
min ceiling height	3m/10ft

cluster ceiling speaker: AT0664

speaker type	4 full-range 20cm/8in speakers
impedance	8Ω nominal
sensitivity	96dB, 1W @ 1m
continuous power	40W
frequency response	30Hz to 15kHz
dimensions (WXHXD)	16.5 x 14 cm/ 6.5 x 5.5 in
weight	4.53kg/10lbs
mounting	replaces 2ft x 2ft acoustic ceiling tile; includes safety wire
speaker wire	AT0581 7.3m/24ft, 14.6m/48ft, and 18.3m/60ft lengths available
min ceiling height	3.7m/12ft
enclosure	fire and smoke emission rated

time period of warranty

This warranty will go into effect upon the date of purchase and will stay in effect as long as the instrument remains the property of the original owner. EASYLISTENER 2™, VOCALIGHT™ and ONWAVE™ have a 3-year warranty. All other products have a 1 year warranty.

what is covered by this warranty

Any electronic component, which because of workmanship, manufacturing or design defects, fails to function properly under normal use during the life of this warranty will be replaced or repaired at no charge for parts or labor, when returned to the factory service center. Transportation in and out is paid by the customer. If it is determined that repair is not feasible, the entire unit may be replaced with an equivalent unit upon mutual agreement of the manufacturer and customer.

what is not covered by this warranty

This limited warranty does not apply to:

1. Malfunctions resulting from abuse, neglect or accident
2. Instruments connected, installed, used or adjusted in any manner contrary to instructions provided by the manufacturer
3. Consequential damages and damages resulting from delay or loss of this instrument. The exclusive remedy under this warranty is strictly limited to repair or replacement as herein provided
4. Products damaged in transit unless investigated by the shipper and returned to the warrantor with the investigation report
5. Peripheral accessories as itemized within the product specification sheet as applicable, when such items are returned within 1 year from original purchase
6. Batteries if applicable

Phonic Ear Inc. reserves the right to make changes in the design or construction of any of its instruments at any time without incurring any obligation to make any changes whatsoever on units previously purchased.

This warranty is in lieu of all other expressed warranties. All expressed and implied warranties will terminate upon the expiration of this written warranty. No representative or person is authorized to represent or assume for us any liability in connection with the sale or use of our products other than as set forth above.

what to do if you need service

If you require service under the warranty terms, obtain a service order form either online at **www.phonicear.com/support.asp** or through our U.S. customer service department at **800.227.0735, then press 7** (or +1.707.769.1110 outside the U.S.). Fill the form out completely remembering to include:

1. Description of the problem

2. Your billing address

3. Your shipping address (if different from billing address)

4. Contact name and phone number

5. A P.O. number if the equipment is not under a warranty or service contract

Then, carefully package the equipment in the original shipping container to prevent damage and send it postpaid to the service center near you:

USA/International:
Phonic Ear Inc.
3880 Cypress Drive
Petaluma, CA 94954-7600
U.S.A.

In Canada:
Phonic Ear Ltd.
10-7475 Kimbel Street
Mississauga, Ontario
L5S 1E7 Canada

what to do if you have questions

If you have any questions about service, call the service department at **800.227.0735, then press 7.**

about your batteries

To ensure that your batteries are as fresh as possible upon arrival, we have intentionally not installed them in your equipment.

battery replacement

It is recommended to re-order new rechargeable AAA NiMH batteries from Phonic Ear annually.

21 C.F.R., part 801.420 - important notice for prospective hearing instrument users

Good health practice requires that a person with a hearing loss have a medical evaluation by a licensed physician (preferably a physician who specializes in diseases of the ear) before purchasing a hearing instrument. Licensed physicians who specialize in diseases of the ear are often referred to as otolaryngologists, otologists, or otorhinolaryngologists. The purpose of a medical evaluation is to assure that all medically treated conditions that may affect hearing are identified and treated before a unit is purchased.

Following the medical evaluation, the physician should give you a written statement which states your hearing loss has been medically evaluated, and that you may be considered a candidate for a hearing instrument. The physician should refer you to an audiologist or hearing aid dispenser, as appropriate, for a hearing instrument evaluation.

The audiologist or hearing aid dispenser will conduct a hearing instrument evaluation to assess your ability to hear with and without a hearing instrument. The evaluation will enable the audiologist or dispenser to select and fit a unit best suited to your individual needs.

If you should have reservations about your ability to adapt to amplification, you should inquire about the availability of a trial rental or purchase-option program. Many dispensers now offer programs that permit you to wear the hearing instrument for a period of time for a nominal fee after which you may decide if you want to purchase that unit.

Federal law restricts the sale of hearing instruments to those individuals who have not obtained a medical evaluation from a licensed physician. Federal law permits a fully informed adult to sign a waiver statement declining the medical evaluation for religious or personal beliefs that preclude consultation with a physician. The exercise of such a waiver is not in your best interest and its use is strongly discouraged.

children with hearing loss

In addition to seeing a physician for a medical evaluation, a child with a hearing loss should be directed to an audiologist for evaluation and rehabilitation since hearing loss may cause problems in language development and the educational and social growth of a child. An audiologist is qualified by training and experience to assist in the evaluation and rehabilitation of a child with a hearing loss.

transmitter

This transmitter is authorized by rule under the Low Power Radio Service (47 C.F.R. Part 95) and must not cause harmful interference to TV reception or United States Navy SPASUR installations. You do not need an FCC license to operate this transmitter. This transmitter may only be used to provide: auditory assistance to persons with disabilities, persons who require language translation, or persons in educational settings; health care services to the ill; law enforcement tracking services under agreement with a law enforcement agency; or automated maritime telecommunications system (AMTS) network control communications. Two-way voice communications and all other types of uses not mentioned above are expressly prohibited.

This device may not interfere with TV reception or federal government radar, and must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, only use supplied antenna that is sold with this transmitter. Use of any other antenna which has not been approved by the manufacturer will violate FCC rules and regulation and void the user's authority to operate this device. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

receiver: part 15, subpart B

EasyListener 2 Receiver 230R

Tested to comply with
FCC Standards

FOR HOME OR OFFICE USE

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

u.s.a. **800.227.0735,** then press **5** • canada **800.263.8700** • europe **+45 3917 7101**

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