



The Leader in Architectural Audio™

PN. 33-1977 10.03

# INSTALLATION INSTRUCTIONS

## SONANCE VIRTUOSO™ SERIES

### 8" IN-WALL SPEAKERS

## INTRODUCTION

Thank you for purchasing Sonance Virtuoso™ in-wall speakers. When properly installed, this product will provide you with years of entertainment pleasure.

To obtain the full potential of your new speakers, please read all instructions before starting the installation. If you do not have the necessary skills to install the speakers yourself, contact your Authorized Sonance Dealer for installation options.

## PARTS LIST

Each Sonance Virtuoso speaker includes the following items:

- (2) Sonance Virtuoso speakers
- (2) Paintable grilles
- (2) Plastic paint plugs to protect speakers during painting
- (1) Mounting cutout template (in packaging)

## CUSTOM INSTALLATION

Your Sonance Virtuoso speakers will provide maximum performance and entertainment value when custom installed by skilled professionals with specialized tools and experience to design and install audio/video and related systems. These professionals can assist you in the selection of complementary components engineered to meet your needs and optimize performance while satisfying the physical and aesthetic demands of the space you have chosen for your home theater.

Custom installed systems can be configured to accommodate music reproduction throughout your home, security, telephone, and other home systems. Professional installers coordinate their efforts with architects, interior designers, and electricians to ensure that these systems blend into your home both functionally and aesthetically.

The increasingly sophisticated audio and video components now available demand expert system design and installation to deliver full value. More than ever, consumers rely on custom installers to help them explore the myriad of home entertainment options now available, to explain the features and functions of each and to assure compatibility of related components.

Custom installation caters to the homeowner who eschews the complexity and unsightliness of traditional audio and video systems, yet wants to enjoy music throughout the home. In the capable hands of a custom installer, special devices like those supplied by Sonance can make the most sophisticated audio/video systems easy to use and practically invisible.

The growing popularity of home theaters speaks to a change in the way you look at audio and video components. You probably see them as an integral part of an investment in your home and lifestyle. The professional installer can assure that this investment meets your expectations.

## SPEAKER PLACEMENT

All Sonance Virtuoso in-wall speakers fit into a standard 2" x 4" wall. The location of the speakers should be determined by considering your primary listening location and aesthetic values. For best results, contact your Authorized Sonance Dealer for advice.

## Distributed Audio Placement

The Sonance Virtuoso series speakers possess extremely smooth and predictable off axis response. The ideal mounting height for Sonance Virtuoso speakers is at about ear level. Remember to take the listening area into consideration. For example, if people will primarily be standing in the area where the speakers are installed, the mounting height will be higher than it would for an area where people will primarily be sitting.

Virtuoso speakers are equipped with a pivoting Sonic Eye™, allowing you to angle the midrange/tweeter array toward the listening area. Since locating a speaker at ear level is not often possible, the Sonic Eye will allow the speaker to be mounted in almost any location. After the speakers are installed, pivot the Sonic Eye toward the primary listening position. If the speaker will be used in a two-channel stereo system, always try to place the right and left speakers the same distance from the listening position.

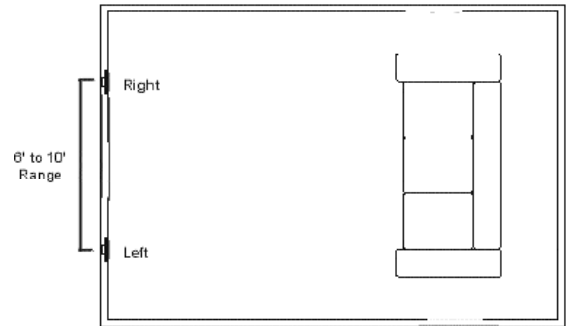


Figure 1. Two-Channel Stereo Placement

## Home Theater Placement

Pre-installation is critical to achieving the maximum performance of your Sonance Virtuoso speakers. Factors such as the location and height of seating and location of screen dictate the proper placement and direction of the speakers. Correct placement of Sonance Virtuoso speakers assures that you will enjoy the full effect of your home theater.

In home theater applications, optimal placement for left and right speakers is six to ten feet apart. (All measurements are from the center of the tweeter.) Mounting height should be at about ear level (between 38 and 42 inches). The center channel speaker should be situated at an equidistance between the left and right speakers.

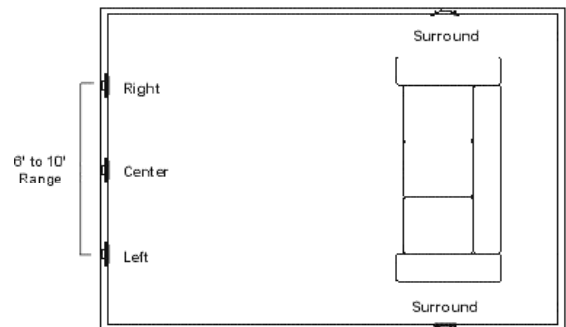


Figure 2. Five-Channel Home Theater Placement

## SURROUND PLACEMENT

Your Sonance Virtuoso series speakers can be used as surround speakers in your home theater. Surround speakers can be located in the side walls or ceiling of your home theater. The proper placement of surround speakers is very room dependent. If you are unsure about where to locate your surround speakers for best performance, contact your Sonance Dealer for advice.

When mounting your surround speakers in the ceiling, locate the speakers two to six feet behind your listening position. The speakers should be separated anywhere from six to ten feet apart center to center.

In addition, your Sonance Virtuoso speakers can be used in a seven-channel home theater setup, where two additional surround speakers are placed directly behind the listening area.

Once your speaker system is installed, we highly recommend the use of an inexpensive SPL meter (Radio Shack part number 33-2050). Place the SPL meter at the listening position at seated ear level. Turn on your surround receiver or processor and engage the calibration signal. The signal from the receiver or processor will cycle through the left, center, right and surround speakers. Adjust the level controls on your receiver or processor so that all the speakers produce the same SPL reading. This will calibrate your system so it accurately reproduces the movie you are viewing. Your receiver or processor manual will contain more detailed instructions on calibrating your system.

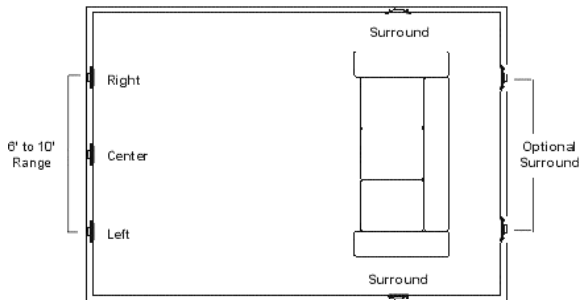


Figure 3. Seven-Channel Home Theater Placement

## WIRE GAUGE AND QUALITY

### General Rule

The total wire resistance should be less than 10% of the speaker impedance. If using an 8 ohm speaker, your total wire resistance should be no more than 0.8.

### Example

Using 200 feet of 18-gauge cable on a speaker will add approximately 2.59 (from the chart below) to the impedance of the speaker being used. If that happens to be an 8 ohm speaker, the total impedance in that part of the system is approximately 10.6 (8+2.59). While that may be acceptable to some people, the resulting sound will be less dynamic than if better, larger cable (smaller gauge numbers) is used.

The following chart shows the corresponding gauge and distances. From the general rule, you should never run cable longer than 10% of the speaker impedance. For example, for 18-gauge wire the maximum recommended length for an 8 ohm speaker is 50 feet. The following impedances (typical in MediaLinQ® Bronze cable) are in two conductor and are given in 50-foot increments.

Wire Resistance in Ohms vs. Length of Cable Run							
Distance in Feet		50'	100'	150'	200'	250'	300'
AWG	Str & AWG						
24	7 @ 32	2.33	4.66	6.99	9.32	11.65	13.98
22	19 @ 34	1.37	2.75	4.12	5.49	6.87	8.24
20	19 @ 32	0.86	1.73	2.59	3.45	4.32	5.18
18	16 @ 30	0.65	1.30	1.94	2.59	3.24	3.89
16	19 @ 29	0.43	0.85	1.28	1.71	2.14	2.56
14	19 @ 27	0.27	0.54	0.81	1.08	1.35	1.62
12	19 @ 25	0.17	0.34	0.51	0.68	0.85	1.02
10	37 @ 26	0.11	0.22	0.33	0.44	0.56	0.67

### USING SONANCE™ ACOUSTIC ENCLOSURES

Your Sonance Virtuoso speaker is designed to perform at its best with the wall cavity sizes commonly found in interior walls. All Sonance speakers are designed to be relatively insensitive to large changes in enclosure volume. This is why our speakers will sound fine even when installed in-ceilings where there may be a large crawl space or an open attic behind the speaker. When properly braced, drywall performs very well as a cabinet wall and the Roto-Flex™ bracketing system is designed to clamp firmly to it, creating a very rigid assembly.

However, in some installations, a separate wooden enclosure that fits inside the drywall or ceiling cavity (a back box) may be useful for optimizing performance or for increasing sonic isolation. Selecting the back box is ideal for improving the sound quality and isolation for an installation location.

Sonance provides Acoustic Enclosures designed specifically for the Sonance Virtuoso speakers. Call us directly or contact your dealer for more information.

### Bracing the Cavity

If possible, get the drywaller to use extra screws and to glue the drywall to the studs around the cavity into which the speaker is being installed. An additional bead of glue along the interior junction where the drywall meets the studs will help reinforce the enclosure. The idea is to make the enclosure as rigid as possible. If you are doing the work yourself and are retrofitting, reach inside the hole cut for the speaker and put a bead of glue everywhere the drywall meets the studs. Wood glue works well for this.

### Using Sonafill™

Sonafill is an acoustical treatment for in-wall loudspeakers that virtually eliminates the noise produced by resonating drywall and dramatically improves mid-bass sound quality. It reduces room-to-room noise, especially in multi-channel installations where many speakers are installed.

Sonafill provides an easier, faster alternative to Sonance Acoustic Enclosures, making it ideal for retrofit installations.

The system consists of two pillows and four tiles with one-sided pressure-sensitive adhesive. Installation is accomplished by first adhering the tiles to the inside of the drywall between the wall studs, then stuffing the two pillows in place behind the tiles.

Contact your local Authorized Sonance Dealer for more details on how Sonafill can improve the performance of your systems.

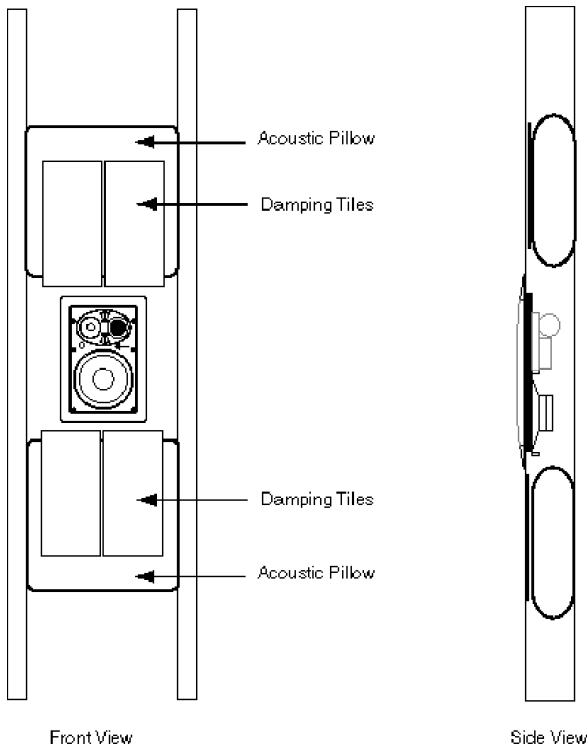


Figure 4. Installing Sonafill

### Insulating the Cavity

If not using Sonafill, speaker performance can be slightly enhanced by insulating the wall cavity with fiberglass insulation.

If the speaker is installed in a ceiling, it is best to lay a sheet of unfaced fiberglass insulation over the speaker.

If a speaker is installed in a wall, use the following insulation instructions. After the wallboard or sheetrock is installed and prior to installing the speakers, line the inside back of the wall cavity by pushing unfaced fiberglass insulation through the cutout hole. Use enough to adequately fill the cavity; even a couple of square feet of insulation is better than none. If the insulation is paper or foil faced, position the paper or foil away from the speaker.

To further improve sound quality, install insulation in each stud bay adjacent to the speaker's location.

### Using the Fixed Depth Bracket (Optional)

Sonance does offer a fixed depth bracket for installations where a Roto-Flex system would interfere with a wall-interior obstruction or for those installations where an extra rigid mounting is required.

## MOUNTING THE SPEAKERS

### New Construction Installations (Unfinished Walls)

Your Sonance Virtuoso speakers feature an integral Roto-Flex mounting system for mounting into ceilings and walls. Since Sonance Virtuoso speakers feature the Roto-Flex system, a separate bracket is not necessary. However, Sonance does offer a fixed depth bracket for installations where the Roto-Flex system is not ideal.

A Staple Template (not supplied) will serve as a guide for the drywall when cutting holes for in-wall speakers in new construction installations. The Staple Template provides a hole pattern for the speaker in the drywall. It is stapled to studs or joists so that the hole opening is in the desired speaker location after the drywall is installed.

For new construction, run wire to desired location prior to drywall installation. Once the drywall is installed, simply follow the procedure outlined in this guide.

### Retrofit Installations (Finished Walls)

With the Roto-Flex system, the speaker can be installed directly into existing walls or ceilings. Once the hole is cut and the cable strung, the speakers can be installed and secured in a matter of seconds.

Once you have determined that the area is free of obstructions such as pipes, conduit, or heating and air returns, find the studs/joists nearest your speaker location. Although measuring in increments of 16" on-center from doorways, electrical boxes, or other room borders and fixtures will provide an approximation, a good stud-finding tool is really essential.

### Cutting the Hole

**IMPORTANT:** When using the Roto-Flex system for retrofit installations, the speaker requires a hole size of 8-3/8" x 14-3/8" (W x H). There must also be at least 3-7/8" depth within the wall to house the speaker. Finally, there must be enough drywall around the hole for the Roto-Flex feet to grab onto (at least 1-1/4" is needed).

A punch out template for cutting the hole is provided in the speaker packaging. Position the template where the speaker is to be located and pencil an outline on the wall or ceiling. In the center of the rectangle, make a small hole with a drywall saw. It is always best to start with a very small hole just to make sure there are no obstructions behind the wallboard. Cutting the wallboard, at first, at a 45-degree angle will allow you to make a fairly simple repair with drywall patch if your earlier obstruction survey was wrong. This way, if repairs are necessary, the cutout piece of wallboard will not fall through the hole. Instead, it will be held flush with the wallboard by the 45-degree cut, and repair can be made easily.

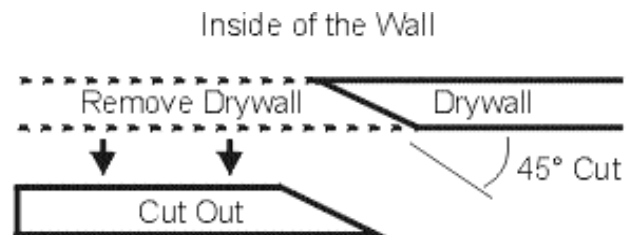


Figure 5. Cutting the Test Hole

After checking for obstructions, carefully cut the retrofit hole into the wall/ceiling at the location where the speaker is to be mounted, cutting at a 90-degree angle to the wall surface.

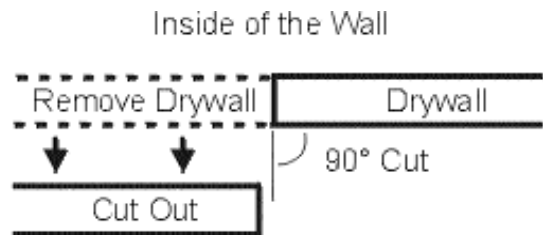


Figure 6. Cutting Speaker Hole

## WIRING AND INSTALLING THE SPEAKERS

Remove the grille by pushing one of the Roto-Flex clamps toward the front of the speaker. They should lay in the full clockwise position so that all clamps are tucked within the cutout border. Observing the proper polarity with your amplifier, (+) to (+) and (-) to (-), attach the speaker wire. Make sure the left channel of the amplifier is connected to the left speaker and the right channel is connected to the right speaker.

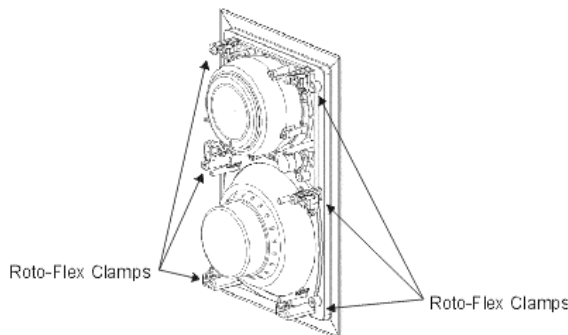
### Bi-wire option (833D).

If you have run a 4-conductor wire or special bi-wire cable to each speaker to take advantage of the bi-wire option, follow these instructions:

1. Remove the two jumper wires. These are the short wires next to the four input terminals. Grip the wires at each end near the terminal board and pull them straight out. The spade lugs should slide easily off of the terminal posts.
2. Attach the two wires you have designated for the woofer and connect them to the lower pair of terminals. Carefully observe polarity, being sure to connect the + lead to the + terminal of your amplifier and the - lead to the - terminal.
3. Attach the two wires you have designated for the mid-high range to the other set of terminals, again being careful to observe proper speaker to amplifier polarity (+ to + and - to -).

Install the speaker by bringing the outer edge flush with the wall. You will notice the four screw heads in four corners and one on each side of the Sonance Virtuoso speaker. Use a screwdriver to tighten these screws evenly. This will automatically rotate your Roto-Flex clamps over the drywall surface and securely clamp your speaker flange to the wall. When you notice resistance in the tightening of all six screws, the speaker has been successfully sandwiched between the drywall and the speaker flange. The Roto-Flex clamps provide a tight fit and prevent unwanted vibration. The flange is designed to flex and conform to any small imperfections in the wall surface. The screws should not be tightened so far that the flange bows out. If this occurs, back off the tension on the screws a little. Finally, if painting is not required, reinsert the grille into the speaker baffle.

**Please Note:** The Roto-Flex will clamp a maximum drywall thickness 1-1/4" (32mm).



## INSTALLING THE IR RECIEVER

To maintain the structural rigidity of the speaker baffle, the Sonance Virtuoso speakers require that a hole be drilled through the speaker baffle for IR receiver installation.

With the back of the speaker facing you, locate the IR receiver position. The area for the IR receiver is on the upper left side of the speaker. You will notice a 1/2" hole in the speaker frame.

Figure 7. Roto-Flex Mounting Mechanism

Drill a small 1/8" hole through the black speaker baffle at the center indentation. You will use this 1/8" hole as a guide. Now turn the speaker over so the front is facing you. Drill a 1/2" hole through the baffle. The use of a step bit is recommended for very clean drilling through plastic. After the hole is drilled insert the IR receiver through the hole; attach the nut on the back of the baffle.

## PAINT THE SPEAKERS AND GRILLES

Speakers and grilles can be painted before installation, which will eliminate the "paint scar" if the speaker needs to be removed for service. Speakers may also be painted after the speaker is mounted into the wall, but before the grilles have been attached. All speakers come from the factory fitted with a plastic "paint plug." These must be used to protect the drivers while the flange is being painted with the wall. Simply replace the grilles with the paint plugs prior to painting.

The grilles may be lightly sprayed with thin paint (5 parts thinning agent to 1 part paint), but be careful not to plug the holes. Too much paint will adversely affect the sound of the speaker. Sonance suggests all grilles be painted separately from the speakers.

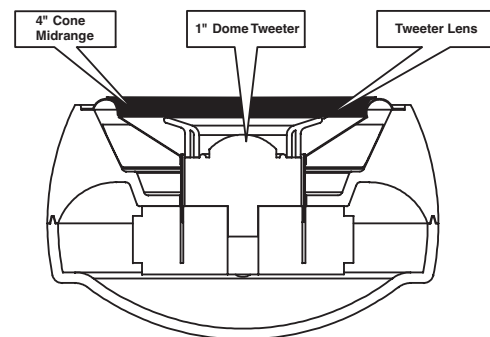
## ADJUST THE SPEAKERS

### Pivoting the Sonic Eye

The unique sealed pivoting enclosure can direct sound toward or away from the listening area to achieve a desired effect. To direct sound toward a listening area, the pivoting enclosure may be angled by applying pressure on the tweeter ring and the outside edge of the midrange. Do not apply pressure to the midrange cone. If there is any question about how the Sonic Eye should be adjusted, consult your Authorized Sonance Dealer.

Here are some additional suggestions:

- Orient the Sonic Eye toward the listening area if the speakers are widely separated and the music fails to blend into a central image when the system is operated in stereo.
- Orient the Sonic Eye toward the listening area when additional brightness is desired.
- Orient the Sonic Eye away from the listening area if the music or video soundstage seems too narrow or restricted.
- Orient the Sonic Eye away from the listening area if it sounds too bright.



Sonic Eye™

Figure 8. Virtuoso Sonic Eye

## ADJUST LEVEL CONTROLS (832D AND 833D)

The Sonance Virtuoso 832D and 833D both feature level controls. These controls provide a slot that allows the speaker to be adjusted with your finger, a screwdriver, or a coin. Turning the control clockwise will increase output, while turning the control counterclockwise will reduce output. Adjust these controls to suit your individual taste and room conditions.

The 832D control adjusts the tweeter level approximately +/- 3db. In rooms that are reflective, the control can be set to its -3dB position. This will reduce brightness. In rooms that are dead sounding, the control can be set to the +3dB setting. This will increase the brightness.

The 833D controls will adjust the tweeter and midrange level approximately +/- 3db. In rooms that are reflective, the tweeter control can be set to its -3dB position. This will reduce brightness. In rooms that are dead sounding, the tweeter control can be set to the +3dB setting. This will increase the brightness. Adjusting the midrange will allow the listener to tailor the speakers to their personal taste.

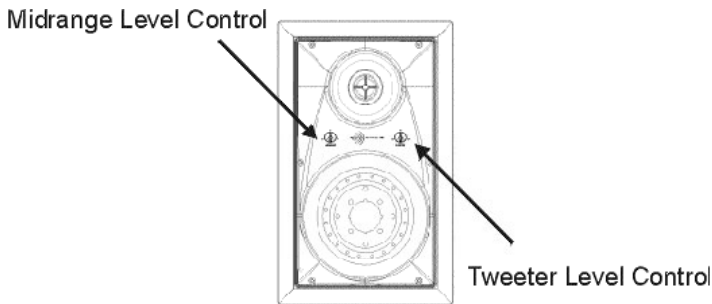


Figure 9. Level Controls

## ACCESSORIES

- **Staple Template** — Plastic template for new construction can be stapled to studs.
- **New Construction Fixed Depth Bracket** — Plastic template for new construction can be stapled to studs.
- **Coverplate** — A white metal plate for covering holes until speakers are installed.
- **OptiLinQ SMR1 Infrared Receiver** — Installed into the round "IR" knockout on the faceplate.
- **Sonance Acoustic Enclosure** — Back box designed specifically for the Sonance Virtuoso speaker.

## SPEAKER SPECIFICATIONS

### 833D

Speaker Design:	In-wall infinite baffle
Tweeter:	1" (25 mm) Aluminum dome, pivoting
Midrange:	4-1/2" (114 mm) Aluminum cone, pivoting
Woofer:	8" (203 mm) Aluminum cone, extended pole piece and rubber surround
Frequency Response:	30 Hz to 21 kHz $\pm$ 2dB
Impedance (Minimum):	6 ohms nominal, 4 ohms minimum
Power Handling:	5 to 175 watts
Efficiency:	92 dB 1W/m
Grilles:	Metal
Adjustments:	2 variable resistors for midrange and tweeter level
Speaker Dimensions (WxHxD):	10" x 16-1/16" x 3-7/8" (254 mm x 406 mm x 89 mm)
Cutout Dimensions (WxH):	8-3/8" x 14-3/8" (213 mm x 365 mm)

### 832D

Speaker Design:	In-wall infinite baffle
Tweeter:	1" (25 mm) Silk dome, pivoting
Midrange:	4-1/2" (114 mm) Woven glass fiber cone, pivoting
Woofer:	8" (203 mm) Woven glass fiber cone with rubber surround
Frequency Response:	32 Hz to 20 kHz $\pm$ 2dB
Impedance (Minimum):	6 ohms nominal, 4 ohms minimum
Power Handling:	5 to 150 watts
Efficiency:	91 dB 1W/m
Grilles:	Metal
Adjustments:	1 variable resistor for tweeter level
Speaker Dimensions (WxHxD):	10" x 16-1/16" x 3-7/8" (254 mm x 406 mm x 89 mm)
Cutout Dimensions (WxH):	8-3/8" x 14-3/8" (213 mm x 365 mm)

### 831D

Speaker Design:	In-wall infinite baffle
Tweeter:	3/4" (19 mm) Cloth dome, pivoting
Midrange:	4-1/2" (114 mm) Polypropylene cone, pivoting
Woofer:	8" (203 mm) Polypropylene cone with rubber surround
Frequency Response:	39 Hz to 20 kHz $\pm$ 3dB
Impedance (Minimum):	6 ohms nominal, 4 ohms minimum
Power Handling:	5 to 100 watts
Efficiency:	90 dB 1W/m
Grilles:	Metal
Speaker Dimensions (WxHxD):	10" x 16-1/16" x 3-7/8" (254 mm x 406 mm x 89 mm)
Cutout Dimensions (WxH):	8-3/8" x 14-3/8" (213 mm x 365 mm)

## TECHNICAL ASSISTANCE AND SERVICE

The Technical Assistance Department at Sonance is available at (800) 582-0772 or (949) 492-7777 to answer any questions concerning the operation and installation of your speakers between the hours of 7 AM and 5 PM Pacific Time, Monday through Friday, except holidays.

In the event that your unit should need repair or service, you may return the unit to your authorized dealer or use the following guidelines:

- 1) Be prepared to state the model number and/or serial number, date of purchase and dealer's name and address when calling.
- 2) Contact Sonance directly at (800) 582-0772 or (949) 492-7777, or at [www.sonance.com](http://www.sonance.com).
- 3) If you are returning the product directly to Sonance call us to obtain a return authorization number before shipping. **YOU MUST HAVE PRIOR AUTHORIZATION TO RETURN YOUR UNIT!**
- 4) The original packaging must be used. If the original packaging is not available, replacements can be obtained from Sonance for a small fee.
- 5) Ship the product via United Parcel Service, Federal Express, or RPS. Please do not use the U.S. Mail service.
- 6) Write the return authorization number on the outside of the box.
- 7) Ship to:           Attn: Technical Assistance Department  
                          Sonance  
                          212 Avenida Fabricante  
                          San Clemente, CA 92672-7531
- 8) FREIGHT COLLECT SHIPMENTS WILL BE REFUSED!

### LIMITED LIFETIME WARRANTY COVERAGE (U.S. ONLY)

Sonance warrants to the original retail purchaser only that this Sonance product will be free from defects in materials and workmanship, provided the speaker was purchased from a Sonance Authorized Dealer after September 1, 2003. Purchases made before that date carry a limited 5 year warranty.

Defective products must be shipped, together with proof of purchase, prepaid insured to the Sonance Authorized Dealer from whom they were purchased, or to the Sonance factory at the address listed on this installation instruction manual. Freight collect shipments will be refused. It is preferable to ship this product in the original shipping container to lessen the chance of transit damage. In any case, the risk or loss or damage in transit is to be borne by the purchaser. If, upon examination at the Factory or Sonance Authorized Dealer, it is determined that the unit was defective in materials or workmanship at any time during this warranty period, Sonance or the Sonance Authorized Dealer will, at its option, repair or replace this product at no additional charge, except as set forth below. If this model is no longer available and can not be repaired effectively, Sonance, at its sole option may replace the unit with a current model of equal or greater value. In some cases where a new model is substituted, a modification to the mounting surface may be required. If mounting surface modification is required, Sonance assumes no responsibility or liability for such modification. All replaced parts and product become the property of Sonance Products replaced or repaired under this warranty will be returned to the original retail purchaser, within a reasonable time, freight prepaid.

This Warranty does not include service or parts to repair damage caused by accident, disaster, misuse, abuse, negligence, inadequate packing or shipping procedures, commercial use, voltage inputs in excess of the rated maximum of the unit, or service, repair or modification of the product which has not been authorized or approved by Sonance. This Warranty also excludes normal cosmetic deterioration caused by environmental conditions. This Warranty will be void if the Serial Number on the product has been removed, tampered with or defaced. This Warranty is in lieu of all other expressed warranties. If the product is defective in materials or workmanship as warranted above, the purchaser's sole remedy shall be repair or replacement as provided above. In no event will Sonance be liable for any incidental or consequential damages arising out of the use or inability to use the product, even if Sonance or a Sonance Authorized Dealer has been advised of the possibility of such damages, or for any claim by any other party.

Some states do not allow the exclusion or limitation of consequential damages, so the above limitation and exclusion may not apply. All implied warranties on the product are limited to the duration of this expressed Warranty. Some states do not allow limitation on the length of an implied warranty. If the original retail purchaser resides in such a state, this limitation does not apply.

### EXCLUSIONS AND LIMITATIONS

The warranty set forth above is in lieu of all other warranties, express or implied, of merchantability, fitness for a particular purpose, or otherwise. The warranty is limited to Sonance products registered herein and specifically excludes any damage to loudspeakers and other allied or associated equipment which may result for any reason from use with this product. Sonance shall in no event be liable for incidental or consequential damages arising from any breach of this warranty or otherwise. This warranty gives you specific legal rights, and you may have other rights which vary from state to state.