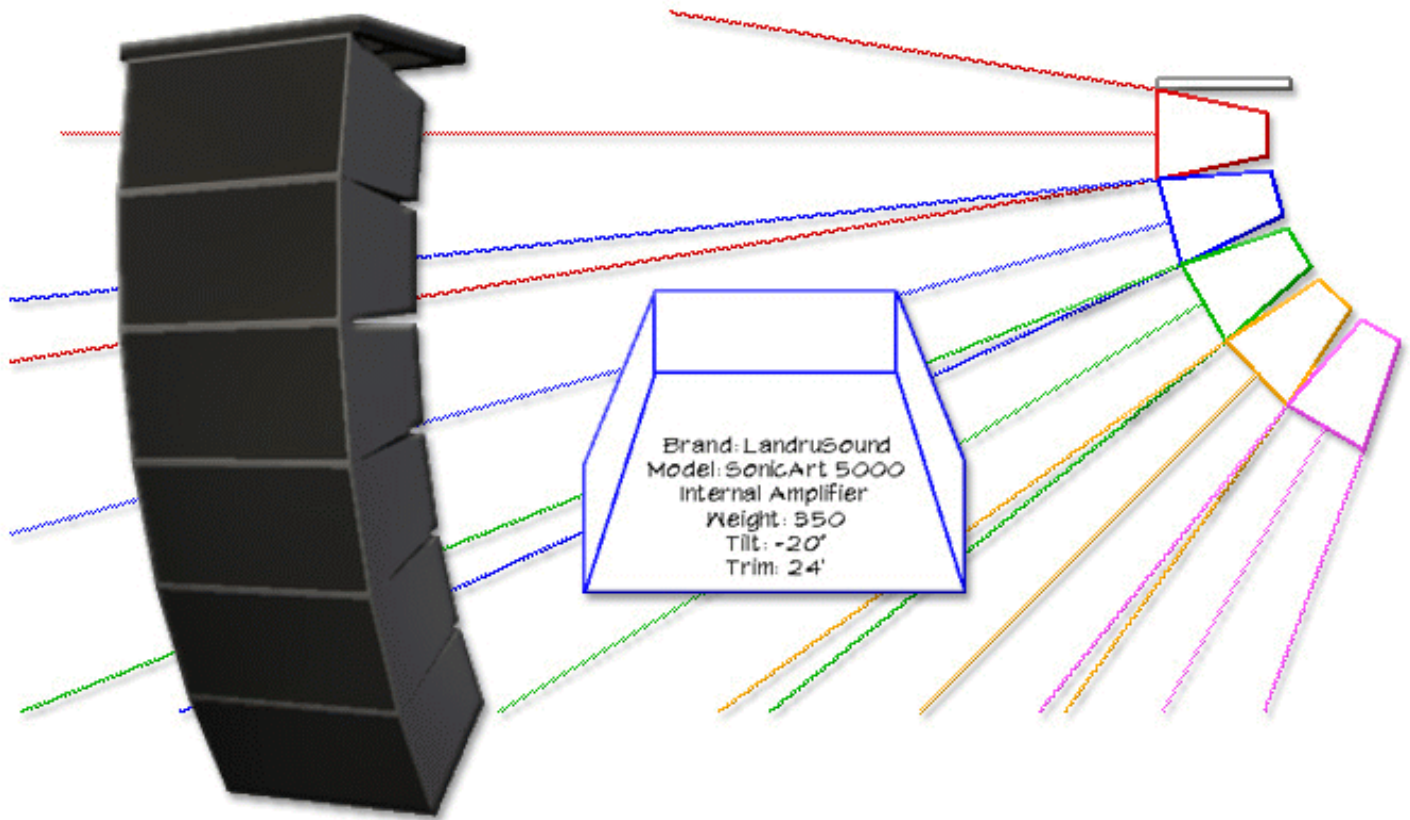


Audio ToolSet

build 1.13



manual



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The *Audio ToolSet* is a set of Vectorworks® Plug-Ins that enable you to insert simple Hybrid (2D and 3D) models of loudspeakers and line arrays. The tools allow Vectorworks® users to perform basic audio coverage analysis, check general space requirements, and visualize audio components for projects. They are not meant to replace (or even approach the complexity of) manufacturers' or 3rd-party high-end sonic analysis software.

Notable features:

- Because the objects generated are not based on fixed Symbols, loudspeaker geometry can easily be changed on-the-fly.
- Regularly-used configurations can be saved in a loudspeaker library for later retrieval.
- Horizontal and vertical dispersion can be displayed. Like loudspeaker geometry, dispersion angles are variable. The dispersion lines compensate for the project “floor” (the drawing Working Plane) and a user-input listening height.
- The tools will help to track relevant information, like loudspeaker brand and model, weight, project location, purpose, drive line, trim height, and tilt angle (absolute and relative to other boxes).
- Select object text can be displayed on drawings.

The *Audio ToolSet* requires Vectorworks® and Renderworks® 2009 or newer.

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Installation

The *Audio ToolSet* consists of two files:

- < AudioBox.vso
- < AudioArray.vso

Copy both files to the Plug-Ins folder of your Vectorworks® folder.

Vectorworks® should not be running during the file copying process.

Next, start Vectorworks® and add the tools to your favorite Workspace. If you've never done that before and are not near your Vectorworks® manual:

- 1) Click...[Tools]...[Workspaces]...[Workspace Editor]. Make sure "Edit current workspace" is selected and click "OK."
- 2) In the resulting dialog, click the "Tools" tab.
- 3) Scroll down the available tool section (*the left side*) until you see the "Landru" section. Click the "+."
- 4) Drag both of the *Audio ToolSet* icons to an existing palette or create a new palette (*or Tool Set*) and drag the icons there.
- 5) Click "OK."

Using the *Audio ToolSet*

Choose the *Audio ToolSet* icon for the particular tool you wish to use (*AudioBox* or *Audio Array*) from the Tool Set to which you added it earlier. A ghost image of the object's default geometry will appear in your drawing window. Click in your drawing to place the *AudioBox* or *Audio Array* object. Rotate the object to the desired angle and click again (*like placing Vectorworks® symbols*).

With the newly-placed object selected, use the Object Info Palette to make adjustments. If the Shape tab is not in the forefront of the Object Info Palette, click it to make it so.

The *Audio ToolSet's* tools' different parameter settings are detailed in the pages that follow. *AudioArray* has additional steps in its use. See pages 7-9 for more information.

Please forgive any discrepancies between this manual, its illustrations, and reality. It is often easier to make software fixes and/or additions than it is to keep a manual current.

AudioBox

Class, Layer, X, Y, Z, and Rotation: Settings similar to other Vectorworks® symbols and objects. (“Z” is the distance from the drawing’s ground plane to the bottom front center of the loudspeaker.)

Type: The only option is “New” unless you have saved custom loudspeaker types to the library using the **Save to Library** button (*see below*). If so, your additions will be listed here, as-well. Selecting a stored type will populate many of the parameters below.

Brand and Model: Places for entering the loudspeaker brand and model.

Front Width and Front Height: The width and height of the front face of the loudspeaker.

Back Width and Back Height: The width and height of the back face of the loudspeaker. (*Back Width and Back Height cannot be larger dimensions than the Front Width and Front Height.*)

Depth: The depth of the loudspeaker.

Weight: A place for entering the loudspeaker weight.

Horizontal Dispersion and Vertical Dispersion: Horizontal and vertical dispersion angles.

Throw Distance: The throw distance reference for the dispersion lines.

Self-Powered: A toggle for noting whether the loudspeaker uses an internal or remote amplifier.

Save to Library (button): Saves key loudspeaker information to an external data file for later use. (*See Type, above.*)

Listening Height: The listening height reference for the dispersion lines. (*Listening Height cannot be higher than a given AudioBox model’s “Z” value.*)

Show Dispersion: Draws top, bottom, left, and right dispersion lines, and a center reference. Also, an outline representing the listening area coverage “shadow” will be drawn if the **Vertical Dispersion** angle, **Throw Distance**, and **Tilt Angle** allow the loudspeaker to cover the **Listening Height** or below.

Show Dispersion Hatch: Adds a hatch pattern to represent the listening area coverage “shadow” if the **Vertical Dispersion** angle, **Throw Distance**, and **Tilt Angle** allow the loudspeaker to cover the **Listening Height** or below, in addition to the “shadow’s” outline. (*See Show Dispersion, above.*)

Support: A pop-up menu of support options.

Tilt Reference: The reference that *AudioArray* uses when setting the tilts of each box in an array - either the front or back face of the loudspeaker.

Tilt Angle: The tilt of the loudspeaker. (*Negative numbers tilt the cabinet down; positive, up.*)

Tilt Difference: The tilt difference between the selected loudspeaker and the one above it, once the **Arrange Column** button has been clicked.

Location: A place for entering the loudspeaker location (such as Downstage Right).

Purpose: A place for entering the loudspeaker purpose (such as Center Fill).

Rack: A place for entering information about the rack driving the loudspeaker.

Drive Line: A place for entering information about the drive line feeding signal to the loudspeaker.

Column ID: The name for the column (if any) in which the *AudioBox* is placed. This is also the name for the *AudioArray* “parent” bumper and the “child” loudspeaker. This is how the Plug-In Object knows which loudspeaker models to control - either via the **Arrange Column** button (*see below*) or the *AudioArray* PIO.

Position in Column: The loudspeaker’s position in its column, once the **Arrange Column** button has been clicked. (“1” is the top loudspeaker.)

Arrange Column (button): If multiple *AudioBox* objects are selected, each with different “Z” values - but with matching **Column IDs**, clicking this button will adjust the stacking order so that 2D “overlaps” are correct, calculate **Tilt Differences**, and assign **Position in Column** numbers.

Notes: A place for entering miscellaneous notes, such as rental source or stock number.

Class AudioBox Parts: Toggle to place the different elements comprising the *AudioBox* model into different classes.

Text Options... (button): A button to open the “Text Options” dialog. This dialog will allow you to show or hide data on your drawings and change the attributes of *AudioBox* text.

Default Text Position (button): Returns text to its default location.

Update (button): Click this button to regenerate the *AudioBox* object. You might need to click this when toggling “Class *AudioBox* Parts” on and off if you’re using Class Attribute settings.

AudioBox Build: The build number of the *AudioBox* Plug-In Object code.

AudioArray (introduction)

AudioArray works a little differently than *AudioBox*. Whereas *AudioBox* inserts a single loudspeaker cabinet, *AudioArray* is actually used to insert a vertical array of loudspeakers. The *AudioArray* Plug-In Object icon you click in your Workspace inserts a PA bumper model (*just like inserting a AudioBox model*). Another step inserts the loudspeaker cabinets.

To use *AudioArray*:

- 1) Click the *AudioArray* icon in the tool palette to which you added it earlier. A ghost image of the tool's default bumper will appear in your drawing. Click in your drawing to place the bumper. Rotate the bumper to the desired angle and click again to set the angle (*like placing Vectorworks® symbols*). If an initial settings dialog box appears, make adjustments and click "OK" in that box.
- 2) With the *AudioArray* object selected, use the Object Info Palette to make adjustments (*such as bumper trim height, bumper dimensions, loudspeaker dimensions and data, and loudspeaker count*). If the Shape tab is not in the forefront of the Object Info Palette, click it to make it so.
- 3) Click the large "Insert Boxes" button toward the bottom of the Object Info Palette. *AudioArray* will place independent "child" loudspeakers that are "connected" to the bumper. The loudspeaker models are built using the *AudioBox* Plug-In Object using the dimensions designated in the *AudioArray* Object Info Palette - and display their own info in the Object Info Palette. The majority of the loudspeakers' settings are "fed" by the *AudioArray* "parent" object.

AudioArray's parameter settings are detailed on the next page...

AudioArray

Class, Layer, X, Y, Z, and Rotation: Settings similar to other Vectorworks® symbols and objects. (“Z” is the distance from the drawing’s ground plane to the bottom front center of the bumper.)

Bumper Details:

Width, Depth, and Thickness: The width, depth, and thickness of the bumper.

Hardware Width: The width of the hardware members comprising the bumper.

Tilt: A place for entering the tilt of the bumper. (Negative values will tilt the bumper and loudspeaker array down. Positive values will tilt the bumper and loudspeaker array up.)

Weight: A place for entering the bumper weight.

Box Details:

Type: The default is “New.” If you have saved custom or stock loudspeaker types to the library using the **Save to Library** button (see below), they will be listed here, as-well. Selecting a stored type will populate many of the parameters below.

Brand and Model: Places for entering the loudspeaker brand and model.

Front Width and Front Height: The width and height of the front face of the loudspeaker.

Back Width and Back Height: The width and height of the back face of the loudspeaker. (The Back Width and Height cannot be larger dimensions than the Front Width and Height.)

Depth: The depth of the loudspeaker.

Weight: A place for entering the loudspeaker weight.

Horizontal Dispersion and Vertical Dispersion: Horizontal and vertical dispersion angles.

Throw Distance: The throw distance reference for the dispersion lines.

Self-Powered: A toggle for noting whether the loudspeaker uses an internal or remote amplifier.

Save to Library (button): Saves key loudspeaker information to an external data file for later use. (See **Type**, above.)

Listening Height: The listening height reference for the loudspeakers’ dispersion lines. (**Listening Height** cannot be higher than a given **AudioBox** model’s “Z” value.)

Show Dispersion: Draws top, bottom, left, and right dispersion lines, and a center reference. Also, an outline representing the listening area coverage “shadow” will be drawn if the **Vertical Dispersion** angle, **Throw Distance**, and **Tilt Angle** allow the loudspeaker to cover the **Listening Height** or below.

Show Dispersion Hatch: Adds a hatch pattern to represent the listening area coverage “shadow” if the **Vertical Dispersion** angle, **Throw Distance**, and **Tilt Angle** allow the loudspeaker to cover the **Listening Height** or below, in addition to the “shadow’s” outline. (See **Show Dispersion**, above.)

Array Details:

Column ID: The name for the inserted “parent” bumper and the “child” loudspeakers. This is how the Plug-In Object knows which **AudioBox** models to control.

Box Count: The number of loudspeakers in the array.

Tilt Reference: The reference that **AudioArray** uses when setting the tilts of each box in an array - either the front or back face of the loudspeaker.

Top Tilt: The tilt of the top loudspeaker. (Negative numbers tilt the loudspeaker down; positive, up.)

Tilt Difference: After the **Insert Boxes** button has been clicked, the box-to-box tilt difference between the loudspeakers in the array.

Location: A place for entering the loudspeaker location (such as Downstage Left).

Purpose: A place for entering the loudspeaker purpose (such as Center Fill).

Rack: A place for entering information about the rack driving the loudspeaker.

Drive Line: A place for entering information about the drive line feeding signal to the loudspeaker.

Notes: A place for entering miscellaneous notes, such as rental source or stock number.

Bottom Box Trim: After the **Insert Boxes** button has been clicked, the vertical trim of the bottom loudspeaker.

Total Weight: After the **Insert Boxes** button has been clicked, the estimated total box and bumper weight of the array. (Remember, THIS IS AN ESTIMATE ONLY. YOU ARE **STRONGLY ADVISED TO CONFIRM ALL CALCULATIONS.**)

AudioArray parameters, continued...

Class *AudioArray* Parts: Toggle to place the different elements placing the *AudioArray* bumper into different classes.

Insert Boxes (button): Inserts *AudioBox* models replaces array models if you've made relevant adjustments to *AudioArray*.

Text Options... (button): A button to open the "Text Options" dialog. This dialog will allow you to show or hide data on your drawings and change to attributes of *AudioArray* text.

Default Text Position (button): Returns text to its default location.

Update (button): Click this button to regenerate the *AudioArray* object. You might need to click this when toggling "Class *AudioArray* Parts" on and off if you're using Class Attribute settings.

AudioArray Build: The build number of the *AudioArray* Plug-In Object code.