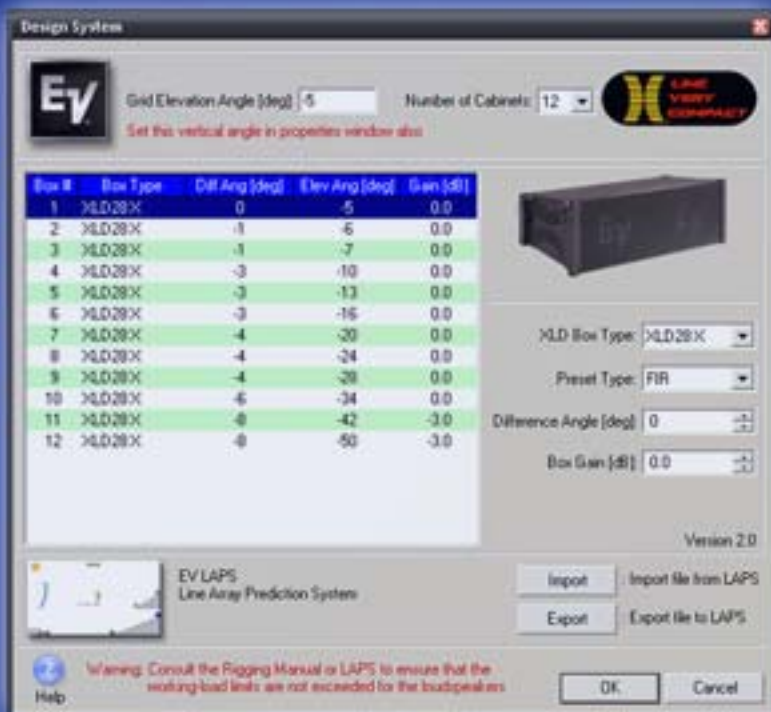
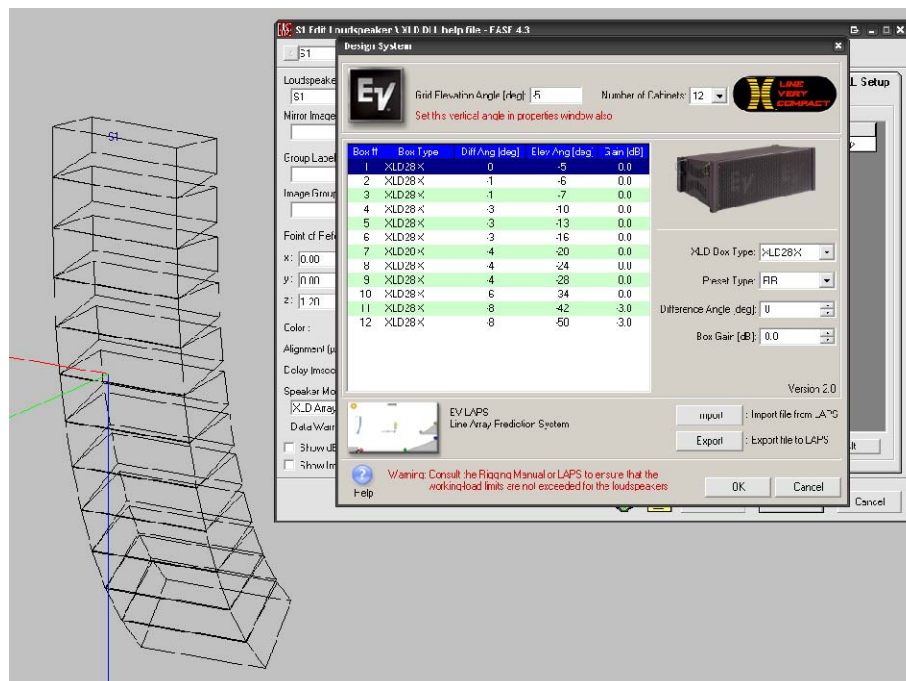
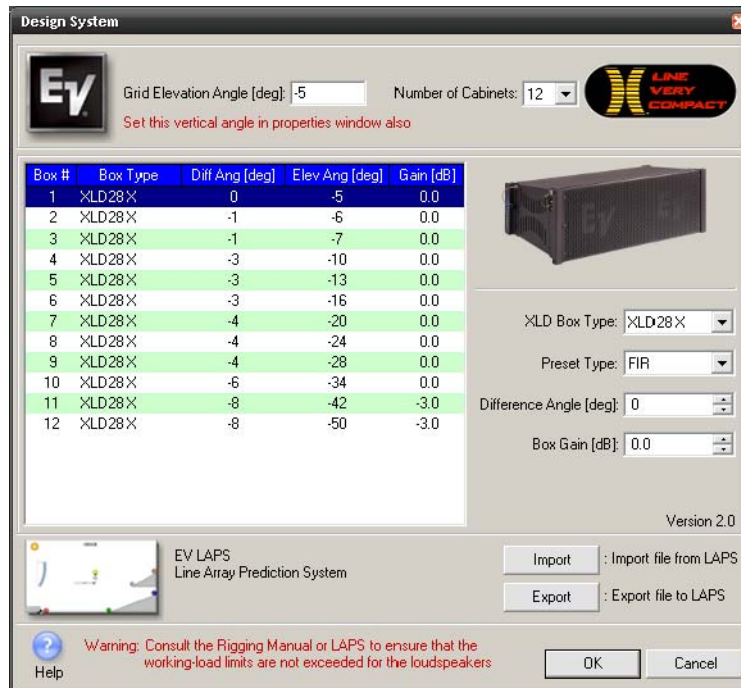


XLD DLL Help file



XLD EASE DLL v2.0 Help File

Thank you for using the new XLD EASE DLL v2.0. The XLD DLL is a tool that will help you construct XLD based line arrays for EASE simulations. There are several new features that can help you create your array faster, including the ability to import and export EV Line Array Prediction Software (LAPS) files. Below is a quick help file to help you better understand the new possibilities and options within the new EASE DLL.



NOTE:

- 1: This DLL is only for use with the Electro-Voice XLD family of speakers. To create arrays from other product families you must use the appropriate DLL for that speaker.
- 2: For best results, always use LAPS first to determine the most appropriate array configuration.

DLL Display:

The DLL Display contains the currently edited array information including the following:

- The number of boxes
- The type of box
- The individual difference angle of each box
- The total array angle (elevation angle)
- The individual box gain value

This table will allow you to edit individual or multiple loudspeakers. You can select an individual box by left-clicking on it with your mouse. You can also change the individual box you have selected by using your keyboard's arrow keys to move up and down through the list. To select multiple boxes, you can use standard Windows procedures:

Left-click and drag your mouse over the boxes you want to select.

-or-

Hold down **Ctrl** and then left click on the cabinets you want to select

-or-

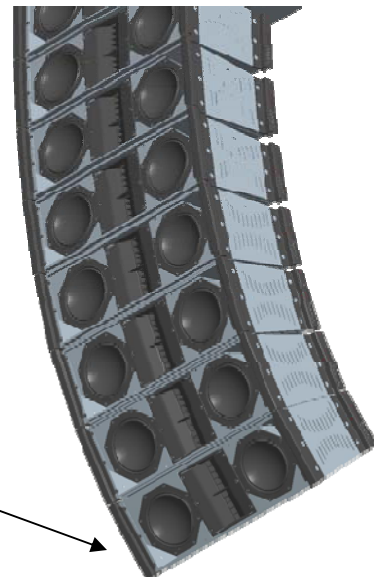
Hold down **Shift** and then left-click on the first and last cabinet that you want to select

Box #	Box Type	Diff Ang [deg]	Elev Ang [deg]	Gain [dB]
1	XLD28X	0	-5	0.0
2	XLD28X	-1	-6	0.0
3	XLD28X	-1	-7	0.0
4	XLD28X	-3	-10	0.0
5	XLD28X	-3	-13	0.0
6	XLD28X	-3	-16	0.0
7	XLD28X	-4	-20	0.0
8	XLD28X	-4	-24	0.0
9	XLD28X	-4	-28	0.0
10	XLD28X	-6	-34	0.0
11	XLD28X	-8	-42	-3.0
12	XLD28X	-8	-50	-3.0

Box #	Box Type	Diff Ang [deg]	Elev Ang [deg]	Gain [dB]
1	XLD28X	0	-5	0.0
2	XLD28X	-1	-6	0.0
3	XLD28X	-1	-7	0.0
4	XLD28X	-3	-10	0.0
5	XLD20X	-3	-13	0.0
6	XLD28X	-3	-16	0.0

The elevation angle shows the cumulative sum of the combined angles in the array. If the initial hang point is angled, this value can be entered into the Grid Elevation Angle and will be added to the sum of the elevation angles in the DLL display.

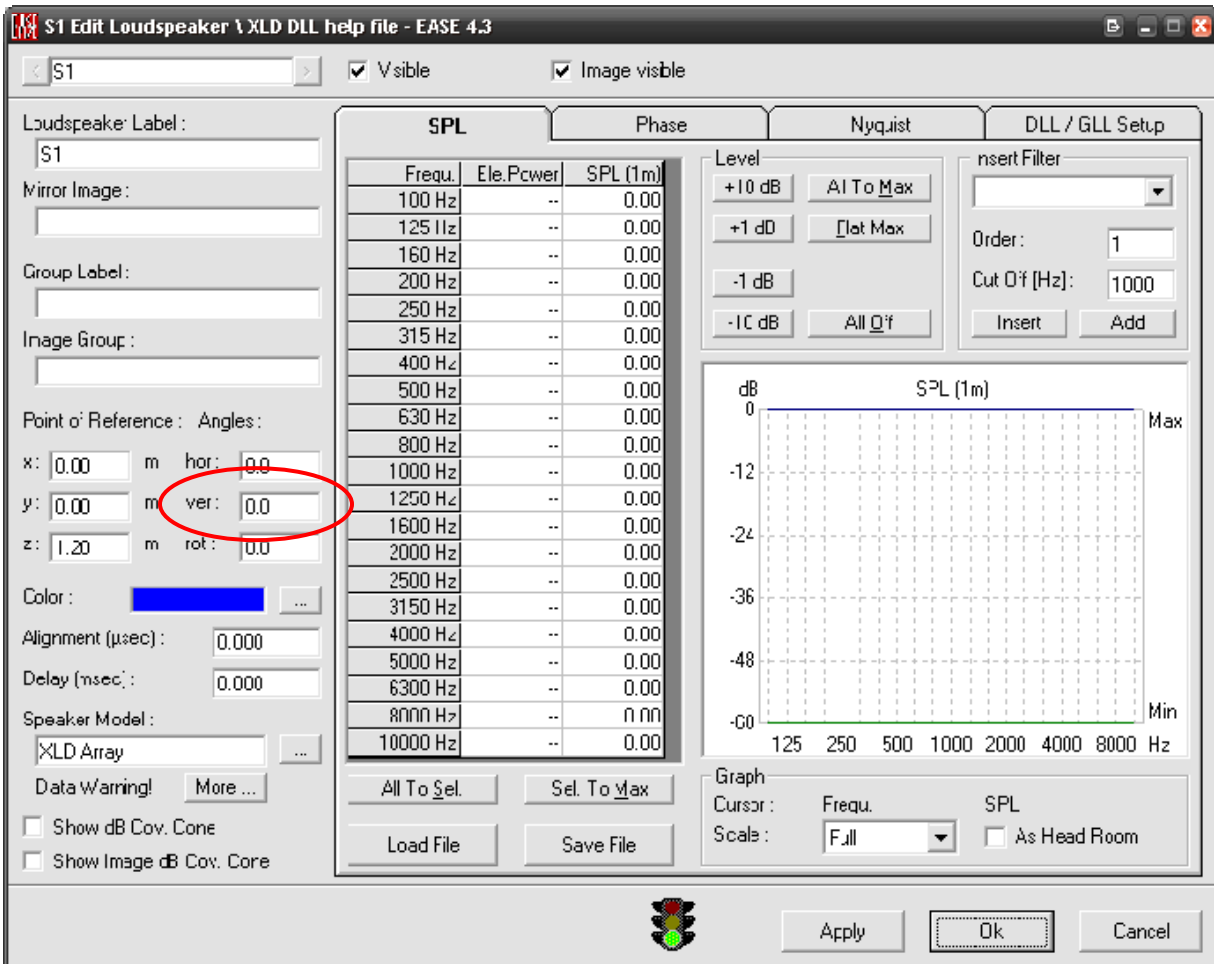
Box #	Box Type	Diff Ang [deg]	Elev Ang [deg]	Gain [dB]
1	XLD28X	0	-5	0.0
2	XLD28X	-1	-6	0.0
3	XLD28X	-1	-7	0.0
4	XLD28X	-3	-10	0.0
5	XLD28X	-3	-13	0.0
6	XLD28X	-3	-16	0.0
7	XLD28X	-4	-20	0.0
8	XLD28X	-4	-24	0.0
9	XLD28X	-4	-28	0.0
10	XLD28X	-6	-34	0.0
11	XLD28X	-8	-42	-3.0
12	XLD28X	-8	-50	-3.0



Grid Elevation Angle [deg]:

This field contains the angle (in degrees) that the entire array is elevated. This corresponds to the “*ver*” (vertical) field under the angles column in the Loudspeaker Property sheet in EASE. This is circled in red in the image below. You may want to change the Grid Elevation Angle in the DLL to match your LAPS simulation; This will allow the Elevation Angles in the DLL display to match Total Tilt in the LAPS display.

Grid Elevation Angle [deg]: -5 Nun
Set this vertical angle in properties window also



EASE Edit Loudspeaker window (screen for EASE V4.3)

NOTE:

1: Changing the Grid Elevation Angle will *not* change the vertical angle in the EASE project. It does allow you to see the correct angles in the DLL. You must change the vertical angle in the Edit Loudspeaker window to affect the array in the model.

Number of Cabinets:

This drop-down combo box allows you to select the total number of cabinets in your array. The maximum number of cabinets in the XLD family is 16.



NOTE: Always consult LAPS or the Rigging Manual to ensure that the loudspeakers do not exceed the working-load limits. Neither EASE nor this DLL will alert you if you are exceeding the limits and creating a potentially hazardous array.

XLD Box Type:

This drop-down combo box allows you to change the selected boxes (highlighted in the display table) to any of the speakers in the XLD family. You change the speaker(s) by selecting the speaker(s) to be changed in the list and selecting the box type that you would like them to be in the combo box. You select the speaker(s) by using standard Windows practices:



Box #	Box Type	Diff Ang [deg]	Elev Ang [deg]	Gain [dB]
1	XLD28 X	0	-5	0.0
2	XLD28 X	-1	-6	0.0
3	XLD28 X	-1	-7	0.0
4	XLD28 X	-3	-10	0.0

Left-click and drag over the boxes you want to select

-or-

Hold down **Ctrl** and click the left mouse button (called *right-click*)

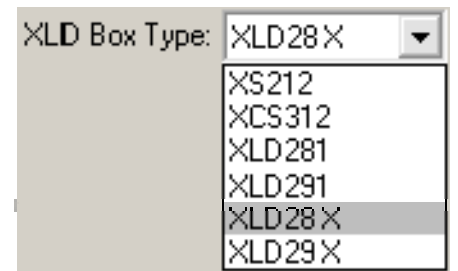
-or-

Hold down **Shift** and left-click

The "X" option:

You can create arrays that contain several different XLD speakers. For example, you can create an array with XCS-312 subwoofers at the top and XLD-281 speakers underneath. You can also create a multi-pattern array in which you can have 90 degree XLD's at the top of the array and 120 degree XLD's at the lower part of the array.

A special DSP preset is required when creating multi-patterns XLD arrays. The LF directivity of the XLD-291 and XLD-281 needs to be matched together for proper phase summation and minimum transition differences between the two types of boxes. When the two XLD types are mixed together the "X" DSP presets must be used and the XLD28X/29X box types must be selected for the proper acoustical prediction of the array. Because of the complicated DSP used when mixing XLD speakers, bi-amping the array is not an option therefore the designer should include enough amplifier channels and DSP outputs to process and power the array in tri-amp mode (3-Way + Sub).



Note that the XCS-312 and XS-212 are subwoofer boxes and do not contain any acoustic data. They are included in this DLL for box spacing convenience and visual reference only.

← Example of an XLD array with XCS-312 cardioid sub-woofers at the top

Preset Type: (FIR-Drive Vs Standard)

Electro-Voice now offers several preset options for some of our concert loudspeakers including the FIR-Drive based presets. Electro-Voice FIR-Drive (Finite Impulse Response) DSP is capable of creating filters that have nearly unlimited amount of correction filters, incredibly steep (greater than 100dB per octave) crossover slopes, and transducer compensating linear phase. Electro-Voice takes advantage of this technology to provide you with loudspeaker presets that have great sound, even coverage, and sufficient output. Since FIR-Drive filtering can have dramatic effects on polar radiation characteristics, we have included the FIR-Drive filter data separately. FIR-Drive presets are only available for tri-amp XLD configurations, so if the intention is to bi-amp the system, the Standard IIR option should be selected.



Electro-Voice currently manufactures two DSP processors that have the capability to process FIR-Drive based presets. The first DSP is the NetMax N8000 digital matrix and the other is the RCM-26 DSP module for the TG-Series remote controlled amplifiers. If you are using one of these DSP's for processing we strongly recommend that you take advantage of the FIR-Drive presets and select FIR-Drive for the preset type. If you are using a non EV DSP or an EV DSP that can not process FIR-Drive then the Standard option should be selected. Signal processors that are not FIR-Drive capable are: DX-38, DC-One, and P-RL/RT series of amplifiers.

TG-Series amplifiers



NetMax N8000



RCM-26 DSP module



NOTE:

The preset type in the XLD DLL is an array function, therefore when selecting a preset type the entire array will be switched to the new selection.

Difference Angle [deg]:

This is the angle of the currently selected box to the box above. In LAPS, this is labeled as "Angle Above". As you make incremental changes to the boxes in an array, you will change the overall vertical dispersion pattern of the array. Using LAPS first is the best way to find which angles each box should be at for best line array performance in your venue. Since each box has a limited angle, the DLL will prevent you from exceeding or selecting an angle option that does not exist. *Difference angle* is designed to modify each individual enclosure separately. The maximum splay angle for an XLD box is 10 degrees.

Difference Angle [deg]:

NOTE:

Always consult LAPS or the Rigging Manual to ensure that the working-load limits are not exceeded for the loudspeakers. Neither EASE nor this DLL will alert you if you are exceeding the limits and creating a potentially hazardous array.

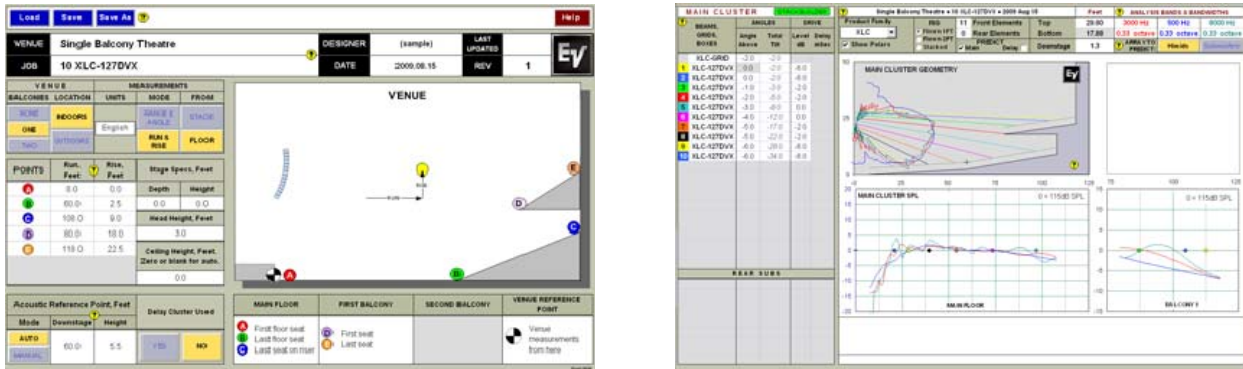
Box Gain [dB]:

This allows you to reduce (attenuate) the level of any individual box or set of boxes at the same time. By changing the level of certain boxes in an array, you can steer the overall vertical dispersion pattern of the array to help create more balanced sound distribution. LAPS is the best way to find which boxes should be attenuated. In addition, LAPS can help you keep in mind the physical configuration of your system, how speakers are wired to amplifiers, and how DSP is applied. For example, if you are wiring the bottom two speakers in parallel, you will need to change their level in the EASE simulation equally. The attenuation is applied to the entire box and not to a specific band-pass within that zone

Box Gain [dB]:

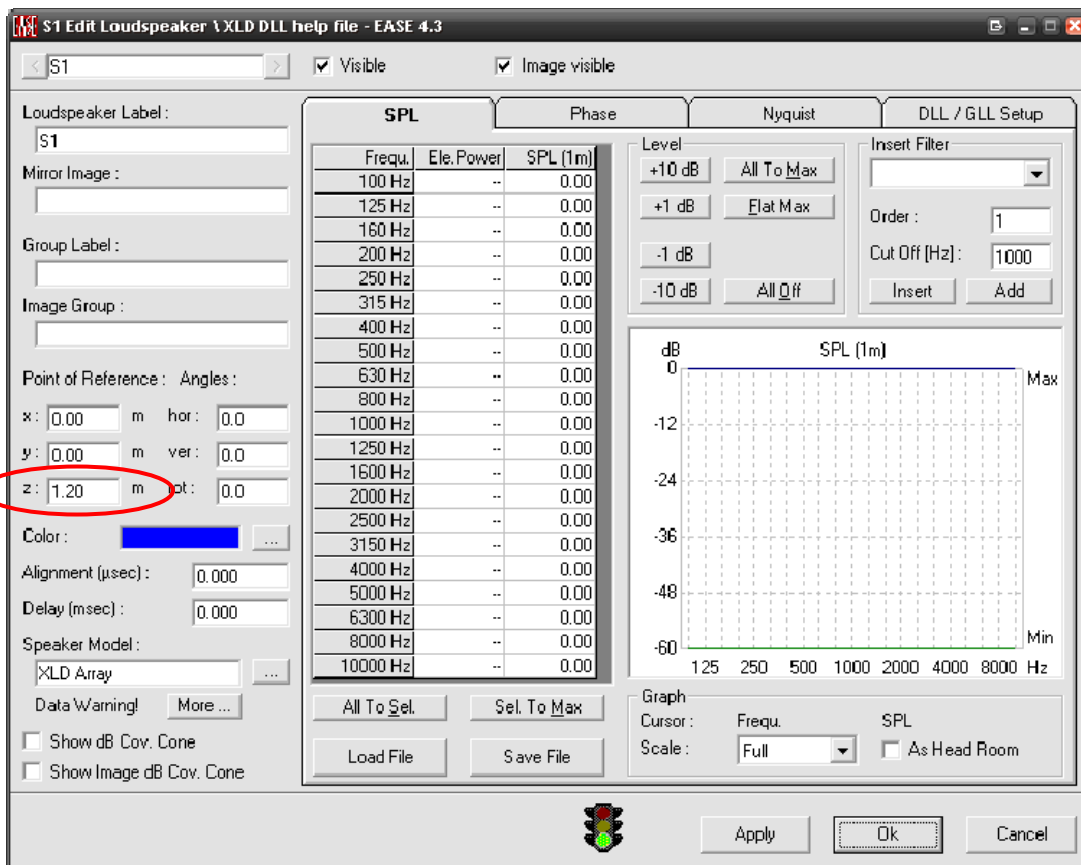
Import File from LAPS:

The Electro-Voice Line Array Prediction Software (LAPS™) is a custom acoustic modeling program that accurately predicts the coverage for various configurations of Electro-Voice line array loudspeaker systems. The LAPS data can be imported into the EASE DLL by using the “Import” feature. Click “Import” and then navigate to the LAPS file (e.g. The State Theater_V0.80.laps) stored on your computer’s hard drive.



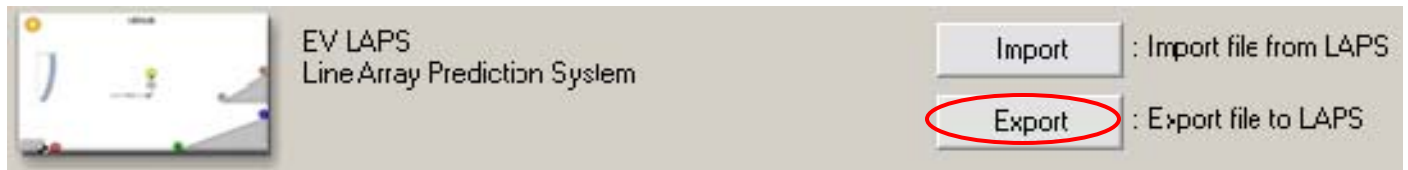
Electro-Voice LAPS 2.2A screen shots

The LAPS file contains the majority of the array configuration, including the amount of boxes, their types, difference angles, and box gains. You must use the EASE Loudspeaker Properties to manually change the trim height or the Z-axis of the Point of Reference (see image below). This value is shown as “Top” in the Array and Predictions Options located on the appropriate array sheet of LAPS. You may also want to change the Grid Elevation Angle in the DLL to allow the DLL display to match the LAPS prediction (see grid elevation angle).

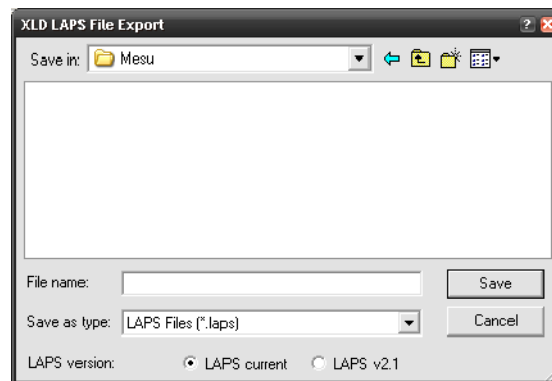


Versions of LAPS at or before v2.1 will not contain separate options for the XLD-281 and the XLD-291. By choosing the option XLD, the DLL will import XLD-281 boxes by default.

Export File to LAPS:



After tweaking the array in EASE it is now possible to export the new configuration as a LAPS file for better archiving and record keeping. This feature can also be used to verify rigging and the mechanical properties of the array after EASE editing. By clicking **“Export”** the DLL will create a LAPS file containing the array information currently in use in the EASE model. Click the **“Export”** button and navigate to the folder location that contains the previously saved LAPS file. Highlight the old LAPS file and rename the title with the new revision number and then click save. Now the new file can be opened in LAPS for further examination and verification.



NOTE:

If you export to a new LAPS file, you will need to create the venue and reset the array height (Top) since this information is not stored in the DLL.

Icon Hyperlinks:

Several icons in this DLL are hyperlinked to get you information quickly. The EV Icon in the upper left hand corner brings you to the Electro-Voice home page at (<http://www.electrovoice.com/index.php>).

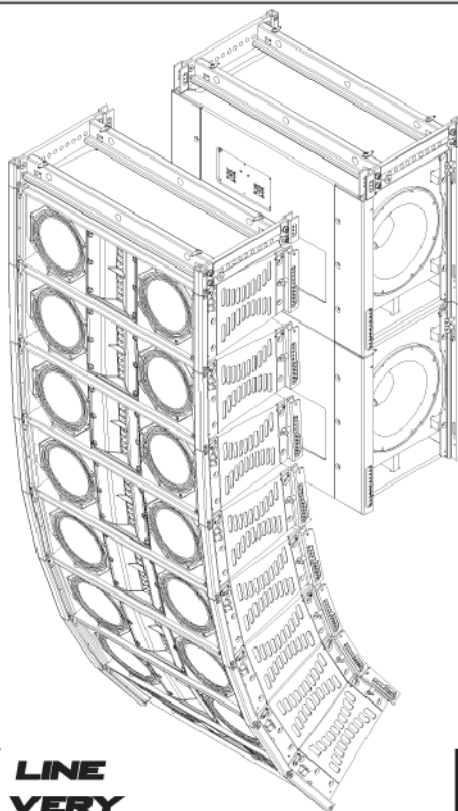


The XLVC icon in the upper right-hand corner and the LAPS icon in the lower left-hand corner take you to the XLVC product family page (<http://www.electrovoice.com/productfamilies/12.html>). From there you can navigate to any EV loudspeaker, find downloads of loudspeaker presets, and obtain Electro-Voice software including LAPS.



For more information about the rigging and mechanical parts of the XLD system please go to www.electrovoice.com and download the XLVD rigging manual.

X-Line Very Compact Rigging Manual



X LINE
VERY
COMPACT

