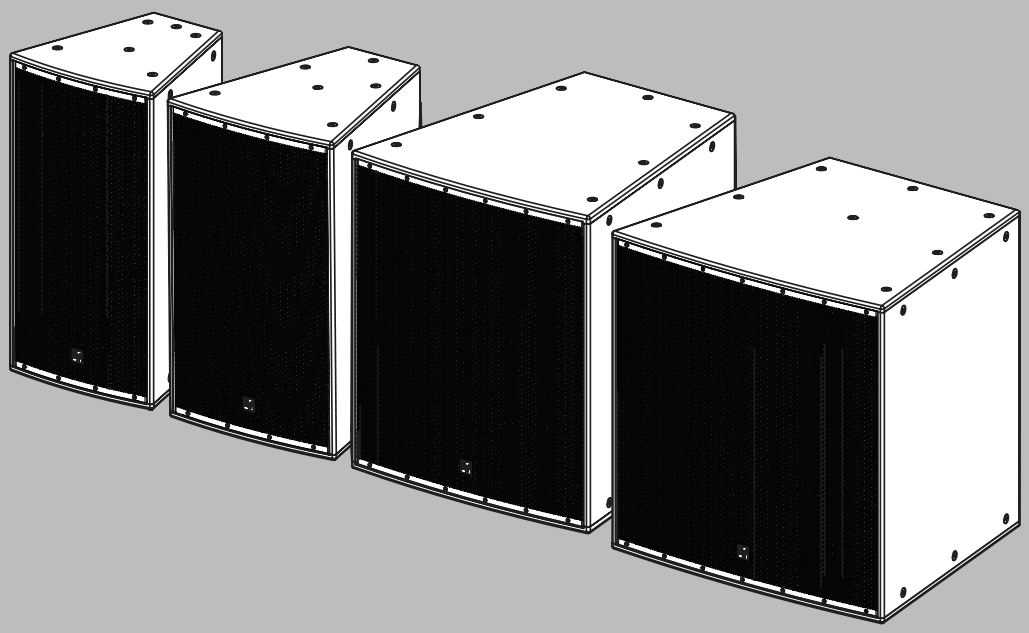
Electro-Voice

Front and horn-loaded 12" and 15" loudspeakers | Dual 15" subwoofers

EVF-12 G2 | EVF-15 G2 | EVH G2 | EVF-215S G2



en User manual

Table of contents

1 Safety

This is a professional product that should be installed, used and maintained by trained professionals only.

1.1 Important safety instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Clean only with damp or dry cloth. No harsh chemicals or solvents.
6. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

1.2 Suspension

Warning!
Read and fully understand the manual and all safety instructions before attempting to suspend this loudspeaker.
Qualified professionals must carry out suspension and installation.
Follow all applicable local laws and regulations. Incorrect or improper suspension could expose persons to serious injury or death.
Carefully inspect loudspeakers and associated hardware for defects or signs of damage before proceeding to suspend the speakers. Inspect all components at least once per year or as local laws and regulations require. Inspection shall include visual survey of all corners and load bearing surfaces for signs of cracking, water damage, de-lamination, or any other condition that may decrease the strength of the loudspeaker enclosure. If any parts are damaged or suspect, or if there is any doubt as to the proper functioning and safety of the items, stop using them immediately.
It is the responsibility of the person installing the assembly to make sure the wall, ceiling, structure, and any attachments are capable of supporting all objects suspended overhead.
Never modify Electro-Voice loudspeakers or rigging components or use a partial assembly of rigging components.
Only use rigging components with the loudspeaker models they are designed for. Any hardware not provided by Electro-Voice is the responsibility of others.
Electro-Voice assumes no liability for any damage or personal injury resulting from improper use, installation, or operation of the product.

Warning!
Use the included hardware and fasteners as shown on this manual. Do not substitute any components or fasteners for provided parts. Contact your customer service representative for genuine replacement parts.

Warning!
Always attach a secondary support mechanism with correctly load rated equipment when speakers are suspended overhead.
In case of failure of the main attachment, the speaker must be prevented from falling without dropping or swinging by a significant amount.

Warning!
Any outdoor use must take into account environment effects such as wind loads, snow or any other condition that can add external forces to the loudspeaker. Always use a qualified professional to certify outdoor use for safety to local environmental conditions.

1.3 Precautions

- These Electro-Voice loudspeakers were designed for use in an environment with ambient temperatures between -20°C (-4°F) and +50°C (122°F).
- Electro-Voice loudspeakers are easily capable of generating very high sound pressure levels. Caution should be taken to avoid prolonged exposure to sound pressure levels exceeding 90 dB. To prevent hearing damage do not listen at high volume levels for long periods.

1.4 Notices

Old electrical and electronic appliances
Electrical or electronic devices that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Waste Electrical and Electronic Equipment Directive).
To dispose of old electrical or electronic devices, you should use the return and collection systems put in place in the country concerned.

Copyright and disclaimer

1.5 Personal Protective Equipment (PPE)

Warning!
Use safety glasses, a safety helmet, safety boots, and safety gloves at all times during installation. Failure to do so can result in injury or death.

2 Short information

2.1 Applicable products

This document is applicable to these products:

EVF G2 12

60° x 40°
- EVF-12/64-B G2 Front load 12" 60x40 indoor bl
- EVF-12/64-W G2 Front load 12" 60x40 indoor wh
- EVF-12/64-BFW G2 Front load 12" 60x40 outdoor bl
- EVF-12/64-WFW G2 Front load 12" 60x40 outdoor wh

60° x 60°
- EVF-12/66-B G2 Front load 12" 60x60 indoor bl
- EVF-12/66-W G2 Front load 12" 60x60 indoor wh
- EVF-12/66-BFW G2 Front load 12" 60x60 outdoor bl
- EVF-12/66-WFW G2 Front load 12" 60x60 outdoor wh

90° x 50°
- EVF-12/95-B G2 Front load 12" 90x50 indoor bl
- EVF-12/95-W G2 Front load 12" 90x50 indoor wh
- EVF-12/95-BFW G2 Front load 12" 90x50 outdoor bl
- EVF-12/95-WFW G2 Front load 12" 90x50 outdoor wh

90° x 90°
- EVF-12/99-B G2 Front load 12" 90x90 indoor bl
- EVF-12/99-W G2 Front load 12" 90x90 indoor wh
- EVF-12/99-BFW G2 Front load 12" 90x90 outdoor bl
- EVF-12/99-WFW G2 Front load 12" 90x90 outdoor wh

120° x 60°
- EVF-12/126-B G2 Front load 12" 120x60 indoor bl
- EVF-12/126-W G2 Front load 12" 120x60 indoor wh
- EVF-12/126-BFW G2 Front load 12" 120x60 outdoor bl
- EVF-12/126-WFW G2 Front load 12" 120x60 outdoor wh

EVF G2 15

60° x 40°
- EVF-15/64-B G2 Front load 15" 60x40 indoor bl
- EVF-15/64-W G2 Front load 15" 60x40 indoor wh
- EVF-15/64-BFW G2 Front load 15" 60x40 outdoor bl
- EVF-15/64-WFW G2 Front load 15" 60x40 outdoor wh

60° x 60°
- EVF-15/66-B G2 Front load 15" 60x60 indoor bl
- EVF-15/66-W G2 Front load 15" 60x60 indoor wh
- EVF-15/66-BFW G2 Front load 15" 60x60 outdoor bl
- EVF-15/66-WFW G2 Front load 15" 60x60 outdoor wh

90° x 50°
- EVF-15/95-B G2 Front load 15" 90x50 indoorbl
- EVF-15/95-W G2 Front load 15" 90x50 indoor wh
- EVF-15/95-BFW G2 Front load 15" 90x50 outdoor bl
- EVF-15/95-WFW G2 Front load 15" 90x50 outdoor wh

90° x 90°
- EVF-15/99-B G2 Front load 15" 90x90 indoor bl
- EVF-15/99-W G2 Front load 15" 90x90 indoor wh

– EVF-15/99-BFW G2 Front load 15" 90x90 outdoor bl
– EVF-15/99-WFW G2 Front load 15" 90x90 outdoor wh

EVH G2

40° x 30°
– EVH-15/43-B G2 Horn load 15" 40x30 indoor bl
– EVH-15/43-W G2 Horn load 15" 40x30 indoor wh
– EVH-15/43-BFW G2 Horn load 15" 40x30 outdoor bl
– EVH-15/43-WFW G2 Horn load 15" 40x30 outdoor wh

60° x 40°
– EVH-15/64-B G2 Horn load 15" 60x40 indoor bl
– EVH-15/64-W G2 Horn load 15" 60x40 indoor wh
– EVH-15/64-BFW G2 Horn load 15" 60x40 outdoor bl
– EVH-15/64-WFW G2 Horn load 15" 60x40 outdoor wh

60° x 60°
– EVH-15/66-B G2 Horn load 15" 60x60 indoor bl
– EVH-15/66-W G2 Horn load 15" 60x60 indoor wh
– EVH-15/66-BFW G2 Horn load 15" 60x60 outdoor bl
– EVH-15/66-WFW G2 Horn load 15" 60x60 outdoor wh

90° x 50°
– EVH-15/95-B G2 Horn load 15" 90x50 indoor bl
– EVH-15/95-W G2 Horn load 15" 90x50 indoor wh
– EVH-15/95-BFW G2 Horn load 15" 90x50 outdoor bl
– EVH-15/95-WFW G2 Horn load 15" 90x50 outdoor wh

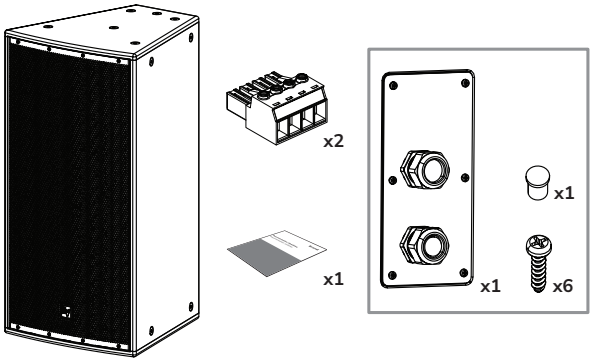
90° x 90°
– EVH-15/99-B G2 Horn load 15" 90x90 indoor bl
– EVH-15/99-W G2 Horn load 15" 90x90 indoor wh
– EVH-15/99-BFW G2 Horn load 15" 90x90 outdoor bl
– EVH-15/99-WFW G2 Horn load 15" 90x90 outdoor wh

EVF G2 215S

– EVF-215S-B G2 Dual 15" subwoofer indoor bl
– EVF-215S-W G2 Dual 15" subwoofer indoor wh
– EVF-215S-BFW G2 Dual 15" subwoofer outdoor bl
– EVF-215S-WFW G2 Dual 15" subwoofer outdoor wh

2.2 Parts included

Make sure that all parts are included and not damaged. If the packaging or any parts are damaged, contact your shipper. If any parts are missing, contact your Sales or Customer Service Representative.



Quantity	Component
1	Loudspeaker
2	Euroblock connectors
1	Dual gland nut cover plate
1	Gland nut plug
6	Screws
1	Quick installation guide

Table 2.1: EVF G2 12 models

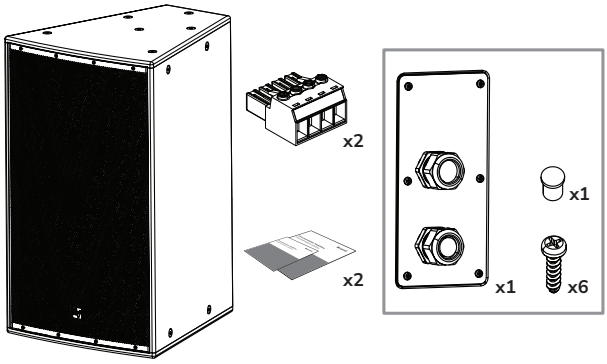


Figure 2.1: EVF G2 15

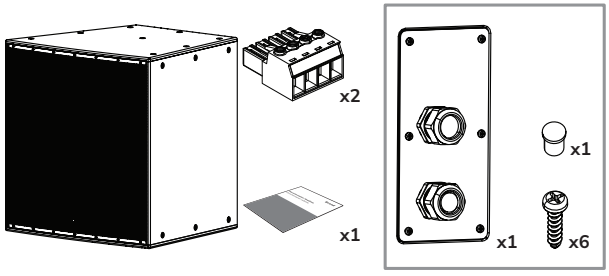
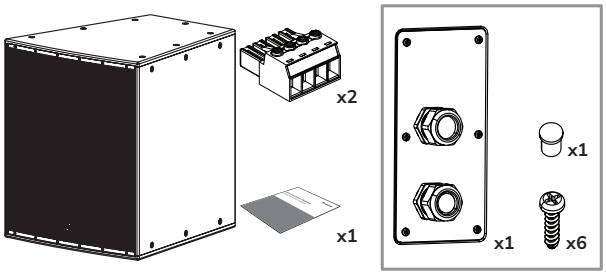


Figure 2.2: EVH G2

Quantity	Component
1	Loudspeaker
2	Euroblock connectors
1	Dual gland nut cover plate
1	Gland nut plug
6	Screws
1	Quick installation guide
1	User manual

Table 2.2: EVF G2 15 and EVH G2 models



Quantity	Component
1	Subwoofer
2	Euroblock connectors
1	Dual gland nut cover plate
1	Gland nut plug
6	Screws
1	Quick installation guide

Table 2.3: EVF G2 215S models

2.3 System features

- **Full acoustic redesign**
  All models with new EV transducers and low-loss crossover, mandatory next-gen low latency FIR presets with flat phase response, and stable minimum impedance compliant with modern IEC60268-5 standards.
- **Simplified portfolio**
  Streamlined to a single higher performance tier at a lower price point. Simplified weatherization to indoor or outdoor versions. Improved pattern control eliminates the need for additional horn patterns and ensures seamless array performance.
- **Better customer experience**
  Improved input panel features with removable Euroblock connections and built-in NL4-connection, full software support in EASE and PREVIEW, and new mounting option for full-range models.
- **New look, higher performance**
  The updated grille design matches recent-generation products better, withstands high-SPLs while wet, and is fully front-serviceable. It also incorporates a rotatable recessed logo.
- **Improved directivity control**
  Using modern tools not available when previous generation EVF and EVH were first designed, G2 models now feature the most accurate, consistent directivity control that we have ever offered in a point source product in this price range.

2.3.1 Integration and compatibility

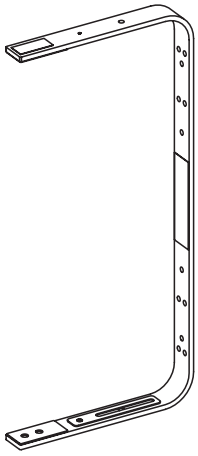
EVF G2 | EVH G2 products feature an all-new low-loss crossover which minimizes the number of components between the transducers and amplifier, enabling even higher performance. As a result, EV-provided presets are required for all G2 products in order to achieve the specified performance. These settings are developed to perform at their best on Dynacord products running on SONICUE Sound System Software or V Series Zone Audio Platform, but may be implemented on a small number of approved alternate platforms when project specifications may require this.

Visit www.electrovoice.com for information on all currently supported platforms.
EVF G2 | EVH G2 products are also added to the EV Loudspeaker database so that installers can predict their coverage in PREVIEW Loudspeaker Software.
Electro-Voice also provides files to model EVF G2 | EVH G2 loudspeakers in EASE, EASE Focus, and BIM Software, as well as CLF files, allowing EVF G2 | EVH G2 to be included in models from most leading software platforms in the market today.

2.3.2 Accessories

The EVF G2 | EVH G2 family includes a select complement of accessories.
All accessories are sold separately.

U-brackets



CTN	Description
EVF-UB-BLK-LB	U-bracket for all EVF speakers black
EVF-UB-WHT-LB	U-bracket for all EVF speakers white

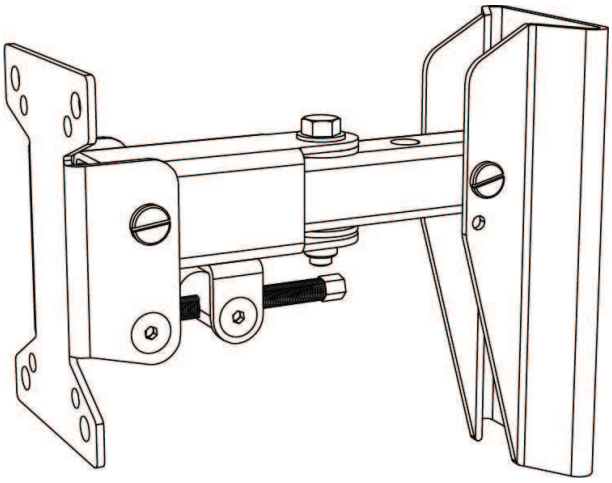
Table 2.4: EVF-UB U-brackets

Optional U-bracket kit for mounting single EVF G2 full-range systems to a wall or ceiling in almost any position to obtain the desired sound coverage.

Notice!
Suspension with EVF-UB is available for EVF G2 full-range models only. Use of the U-bracket points on EVH G2 must be done in accordance with a properly rated custom bracket supplied by a third party. Do not attempt to use EVF-UB to suspend any EVH G2 models

For instructions on EVF-UB installation, refer to EVF-UB Installation Instructions.

Wall brackets



CTN	Description
EVC-WB-BLK	Wall bracket EVC 8",12",15" black
EVC-WB-WHT	Wall bracket EVC 8",12",15" white

Table 2.5: EVC-WB Wall brackets

Optional Omni-mount style wall bracket with pan/tilt adjustability for mounting single EVF G2 full-range systems to a wall or ceiling.

Notice!
Suspension with EVC-WB is available for EVF G2 full-range models only. When using the EVC-WB accessory, mount the EVF G2 loudspeaker in a vertical orientation. Horizontal orientation of EVF G2 must use the EVF-UB accessory or traditional eyebolt suspension.

For instructions on EVC-WB installation, refer to the installation manual provided with each accessory.

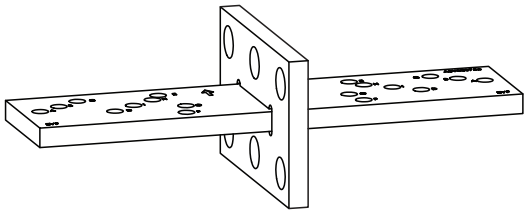
Eyebolts

CTN	Description
EBK-M10L-4HS	Eyebolt high-strength 45mm 4 Pack

Table 2.6: EBK-M10L-4HS eyebolt

EBK-M10L-4HS is a pack of four shoulder eyebolts with four fender washers that attach Electro-Voice loudspeakers with integrated M10 suspension points.
For instructions on EBK-M10-4HS installation, refer to EBK-M10 User Instructions.

Rigging kits



CTN	Description
HRK-1B-LB	Horizontal rigging kit black, EVF + EVF
HRK-1W-LB	Horizontal rigging kit white, EVF + EVF
HRK-2B-LB	Horizontal rigging kit black, EVF + EVH
HRK-2W-LB	Horizontal rigging kit white, EVF + EVH
HRK-3B-LB	Horizontal rig kit black, EVH + EVH
HRK-3W-LB	Horizontal rig kit white, EVH + EVH
VRK-1B-LB	Vertical rigging kit black, EVF + EVF
VRK-1W-LB	Vertical rigging kit white, EVF + EVF
VRK-2B-LB	Vertical rigging kit black, EVF + EVH
VRK-2W-LB	Vertical rigging kit white, EVF + EVH
VRK-3B-LB	Vertical rig kit black, EVH + EVH
VRK-3W-LB	Vertical rig kit white, EVH + EVH

Table 2.7: HRK and VRK rigging kits

Series of horizontal (HRK) and vertical (VRK) rigging kits that accommodate a number of horizontal and vertical system aiming angles.
For information on rigging solutions, refer to the installation manual provided with each accessory.

3 Description

Introducing the long-anticipated second-generation of EVF and EVH loudspeaker from Electro-Voice. EV's most versatile point-source lines for short to medium-throw applications launched back in 2008 is now updated to perform even better in all point-source projects.
From mid-sized stadiums, performing arts spaces, and theaters, to high-SPL music venues or houses of worship, EVF and EVH have been fully redesigned with modern components and processing to improve installation quality while delivering higher performance within the same product class.
While EVF G2 | EVH G2 inherit external dimensions from its 1st-generation equivalent, every other aspect has been redesigned from scratch for better performance. Completely new in-house EV transducers, low-loss crossovers, EV's highest performance HF horns ever, flat-phase FIR presets with <10ms of system latency, new ergonomic wiring input panels, and so on.
Every detail of each model has been carefully considered to deliver not just a light refresh but a reimagining of how much performance is possible from a two-way loudspeaker at this price class.

Overview of EVF G2

EVF G2 includes 36 full-range loudspeakers in 12 and 15-inch woofer sizes. The 12-inch loudspeakers are available in five coverage patterns: 60° x 40°, 60° x 60°, 90° x 50°, 90° x 90° and 120° x 60°. 15-inch loudspeakers provide the same coverage options except for 120° x 60°.

Horn pattern	60° x 40°	60° x 60°	90° x 50°	90° x 90°	120° x 60°
EVF-12 G2	x	x	x	x	x
EVF-15 G2	x	x	x	x	

Table 3.1: Coverage patterns available in EVF G2

Available in black and white colors, EVF G2 also includes 18 fully-weatherized loudspeakers rated IP55 according to IEC 60529. Additionally, the 15-inch models are EN54 certified.
Also part of the EVF G2 family is the dual 15-inch subwoofer. EVF G2 215S is an upgraded version of the previous generation subwoofer, including all-new EV drivers and a low-frequency extension that goes down to 32 Hz. The subwoofer is available in black and white and as indoor and outdoor version.
For a full list of all EVF G2 models, refer to *Applicable products, page 6*.

Overview of EVH G2

EVH G2 includes 20 full-range loudspeakers in 15-inch woofer sizes and five coverage patterns: 40° x 30°, 60° x 40°, 60° x 60°, 90° x 50°, and 90° x 90°.

Horn pattern	40° x 30°	60° x 40°	60° x 60°	90° x 50°	90° x 90°
EVH G2	x	x	x	x	x

Table 3.2: Coverage patterns available in EVH G2

Available in black and white colors, all EVH G2 models are EN54 certified and half are fully-weatherized according to IP55 requirements.
For a full list of all EVH G2 models, refer to *Applicable products, page 6*

Added benefits

The new single-step polyurea paint provides a consistent, higher performance exterior across multiple product families. The brand new white paint offers reliable UV performance and bright RAL9003 color.

The loudspeakers are available in black and white colors and cannot be painted. The extremely robust coating is designed to resist fading and staining for years, which also makes it especially good at not bonding to paint applied after manufacturing. For alternate factory color options, contact your authorized Electro-Voice representative.

New in-house woofers provide significantly better low frequency punch below 200 Hz and better linear response at high-SPL. New high frequency horns boast considerably better coverage uniformity, especially on wider horns.

The updated grille design matches recent-generation products better, withstands high-SPLs while wet, and is fully front-serviceable. It also incorporates a rotatable recessed logo.

The all-new rear input panel comes with gland-nut covers as standard, offers a removable Euroblock connector, as well as a built-in NL4 connector for quick-connect use if weatherization is not required. The new input panel also eliminates proprietary card-based passive/bi-amp selector, replaced by a high-current switch.

EVH G2 models now offer a new center-pivot mounting point for easy integration with third party U-brackets for easier mounting with no custom adapters required. EVF G2 keeps this point as well from G1.

Four Omni-mount points on the rear of the enclosure provide on-cabinet mounting option for forthcoming external Hi-Z transformer, as well as compatibility for EVF with more mounting accessories such as the EVC-WB pan/tilt bracket.

3.1 Product information

System weight:
30.5 kg (67 lb)

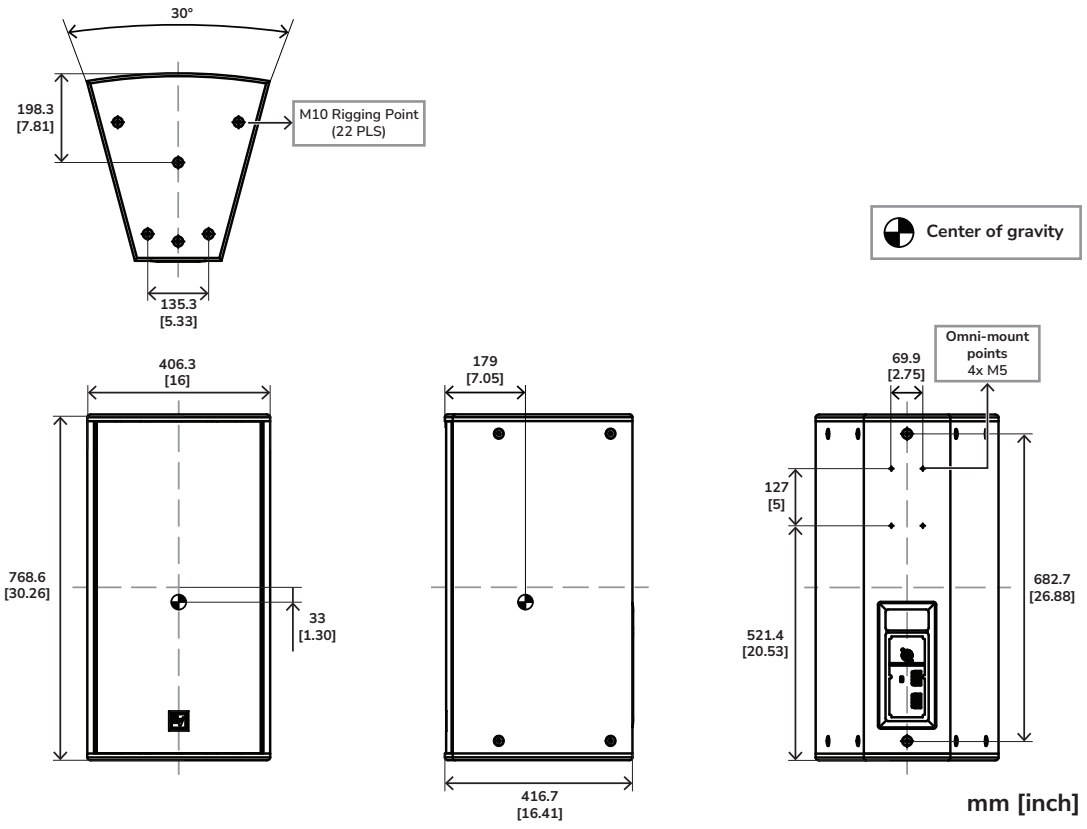


Figure 3.1: EVF G2 12 models

System weight:
38 kg (84 lb)

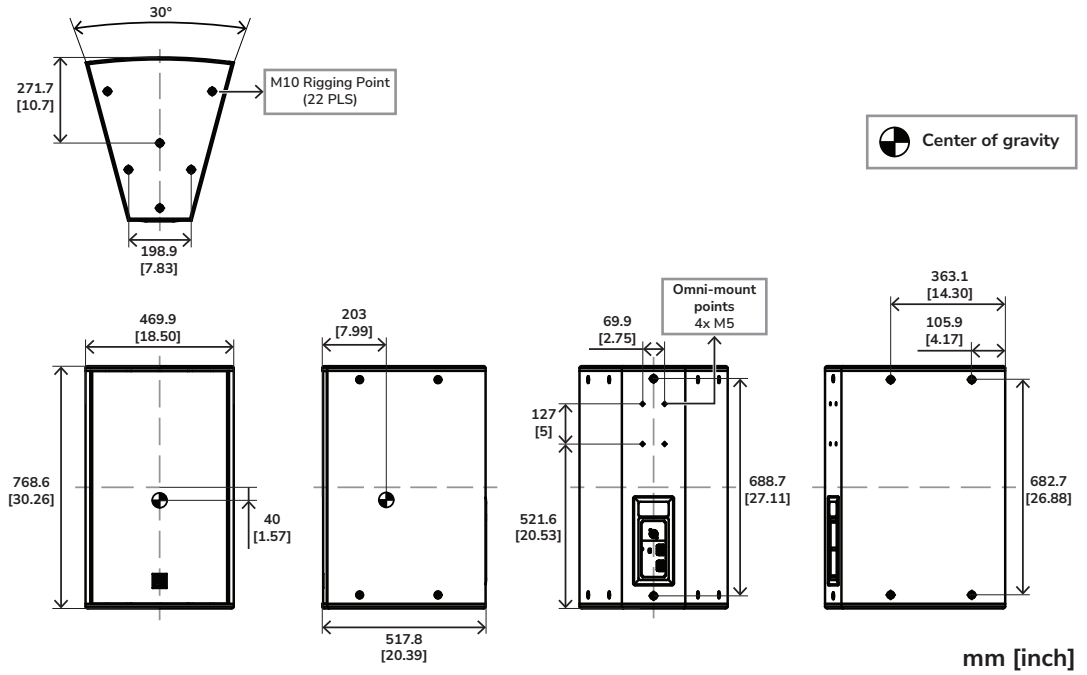


Figure 3.2: EVF G2 15 models

System weight:
73.5 kg (162 lb)

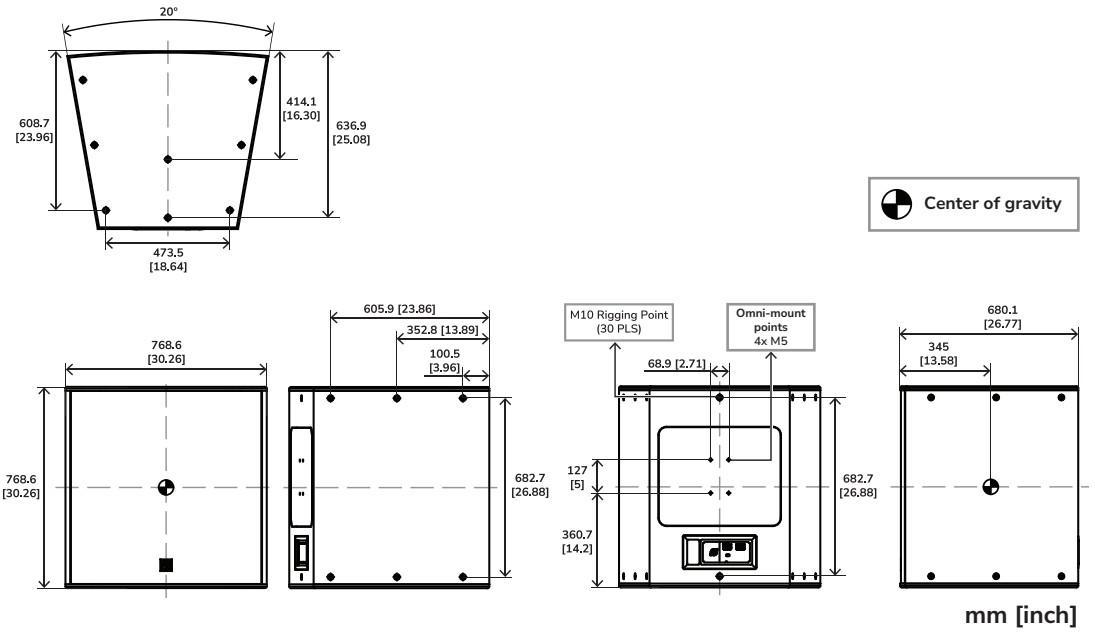


Figure 3.3: EVH G2 models

Notice!
Omni-mount points on EVH G2 provided only for affixing external accessories. Do not use for suspension of the loudspeaker.

System weight:
69 kg (152 lb)

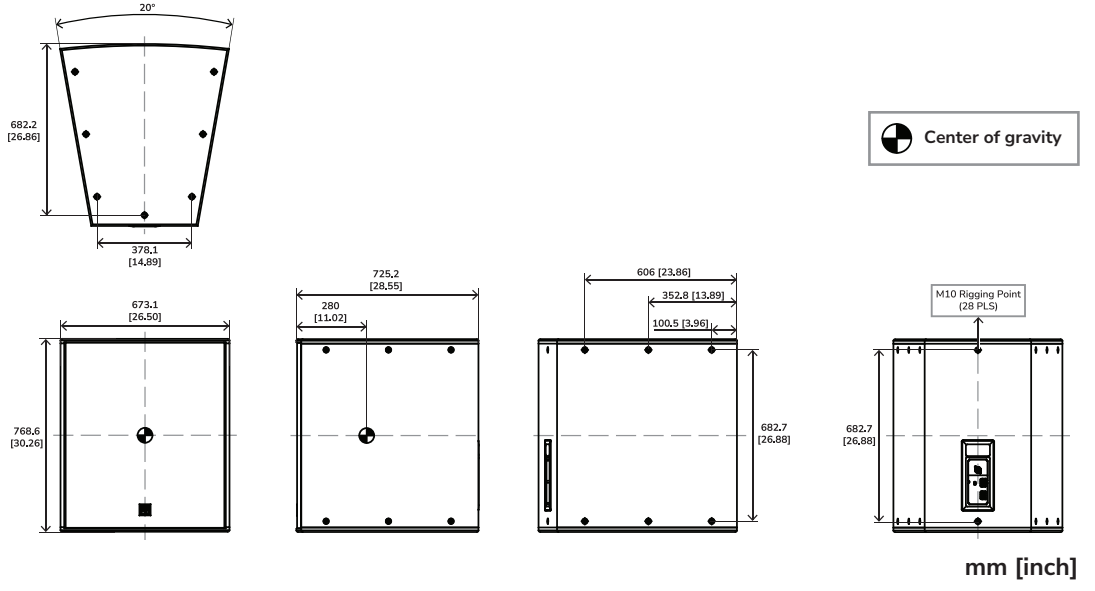


Figure 3.4: EVF G2 215S models

3.2 Weatherization

The fully weatherized models provide water and dust protection according to IP55 per IEC 60529. This protection is only valid with the moisture resistant cover installed and a minimum 5° down tilt. Fully weatherized models are also able to handle full exposure to the elements, including high salt marine environments.

3.3 Safety and performance standards

All EVF G2 | EVH G2 models have been tested to meet the following list of safety and environmental standards:

- Safety Certification: IEC 62368-1, 2014 & 2018
- Salt Spray (FW only): IEC 60068-2-11, Test Ka - 336 Hours
- UV exposure: IEC-60068-2-5 test Sa
- Rigging safety factory: All EVF G2 | EVH G2 models have been pull-tested to an 8:1 safety factor when arranged in vertical arrays of any three units (any mix of EVF G2 12, EVF G2 15, EVH G2, or EVF G2 215S).

4 Installation

4.1 Preparing for installation

For any installed sound system, performing certain checks at the installer's facility can help prevent costly on-site delays. The following short list establishes the foundation for proper cluster performance:

1. Unpack all loudspeakers at the shop.
2. Verify the correct model numbers.
3. Inspect the loudspeakers for overall condition and shipping damage.
4. Check continuity at the loudspeaker input terminals.

Once on site and after the loudspeakers are connected, verify continuity again at the power amplifier outputs.

4.2 Suspension

For information on rigging solutions, refer to the installation manual provided with each accessory.

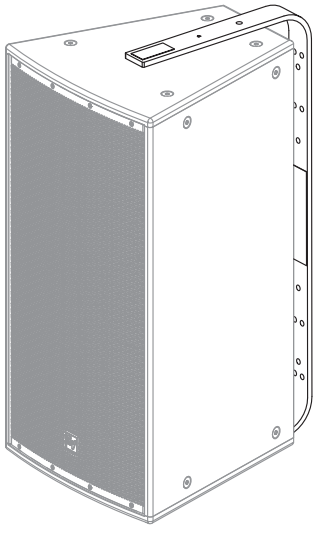
Caution!
It is the installer's responsibility to determine and use the proper mounting hardware for the wall construction type.
Disregarding this caution could result in damage to the product and personal injuries may occur.

EVF G2 | EVH G2 models can be suspended using:

- U-brackets
- Wall brackets
- Eyebolts
- Rigging kits

U-brackets

Notice!
Suspension with EVF-UB is available for EVF G2 full-range models only. Use of the U-bracket points on EVH G2 must be done in accordance with a properly rated custom bracket supplied by a third party. Do not attempt to use EVF-UB to suspend any EVH G2 models



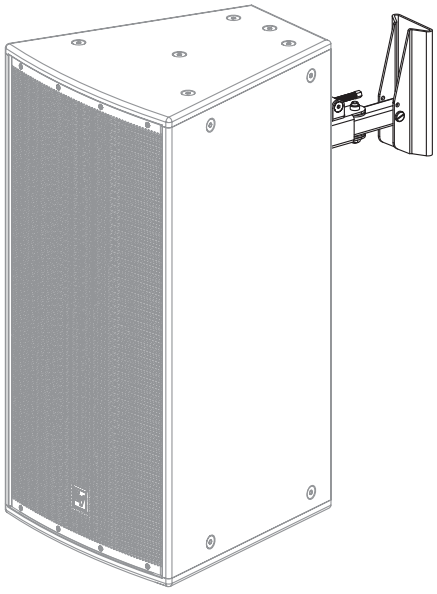
CTN	Description
EVF-UB-BLK-LB	U-bracket for all EVF speakers black
EVF-UB-WHT-LB	U-bracket for all EVF speakers white

Table 4.1: EVF-UB U-brackets

For instructions on EVF-UB installation, refer to EVF-UB Installation Instructions.

Wall brackets

Notice!
Suspension with EVC-WB is available for EVF G2 full-range models only. When using the EVC-WB accessory, mount the EVF G2 loudspeaker in a vertical orientation. Horizontal orientation of EVF G2 must use the EVF-UB accessory or traditional eyebolt suspension.

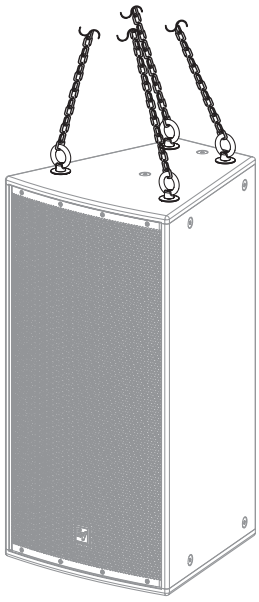


CTN	Description
EVC-WB-BLK	Wall bracket EVC 8",12",15" black
EVC-WB-WHT	Wall bracket EVC 8",12",15" white

Table 4.2: EVC-WB Wall brackets

For instructions on EVC-WB installation, refer to the installation manual provided with each accessory.

Eyebolts

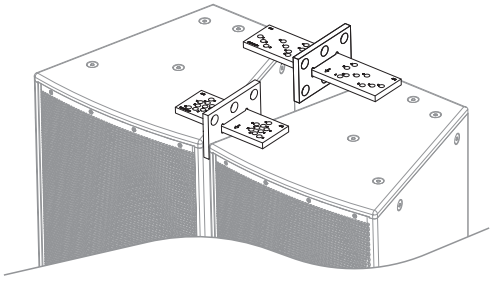


CTN	Description
EBK-M10L-4HS	Eyebolt high-strength 45mm 4 Pack

Table 4.3: EBK-M10L-4HS eyebolt

For instructions on EBK-M10-4HS installation, refer to EBK-M10 User Instructions.

Rigging kits



CTN	Description
HRK-1B-LB	Horizontal rigging kit black, EVF + EVF
HRK-1W-LB	Horizontal rigging kit white, EVF + EVF
HRK-2B-LB	Horizontal rigging kit black, EVF + EVH
HRK-2W-LB	Horizontal rigging kit white, EVF + EVH
HRK-3B-LB	Horizontal rig kit black, EVH + EVH
HRK-3W-LB	Horizontal rig kit white, EVH + EVH
VRK-1B-LB	Vertical rigging kit black, EVF + EVF
VRK-1W-LB	Vertical rigging kit white, EVF + EVF

CTN	Description
VRK-2B-LB	Vertical rigging kit black, EVF + EVH
VRK-2W-LB	Vertical rigging kit white, EVF + EVH
VRK-3B-LB	Vertical rig kit black, EVH + EVH
VRK-3W-LB	Vertical rig kit white, EVH + EVH

Table 4.4: HRK and VRK rigging kits

For information on rigging solutions, refer to the installation manual provided with each accessory.

4.3 Wiring

Warning!
Risk of electrical shock
Before connecting the loudspeaker, verify that the connection to the amplifier is disconnected, or the amplifier is disconnected from mains power. Failure to do so may result in voltage present at the loudspeaker connection sufficient to cause an electrical shock.

EVF G2 | EVH G2 models provide two connection options:
- *Using the NL4 connector, page 21*
- *Using the Euroblock connector, page 22*

Both connections enable the choice between two crossover modes:
- **PASSIVE** mode
- **BI-AMP** mode

PASSIVE mode
A single connection to the amplifier provides a full-range signal to the loudspeaker. An internal crossover divides power between high and low-frequency transducers accordingly.

BI-AMP mode
Two amplifier channels are connected to the loudspeaker bypassing the internal crossover. Each amplifier channel carries only the needed signal directly to each transducer for additional performance.

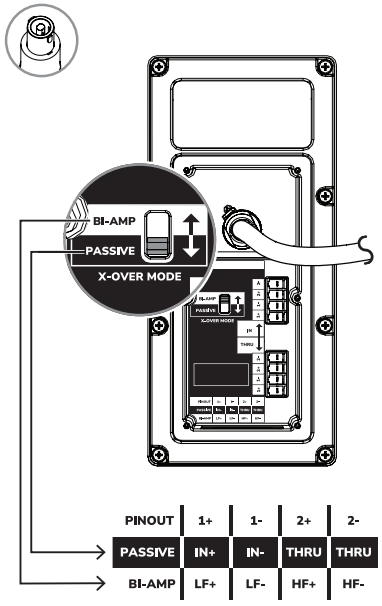
4.3.1 Using the NL4 connector

Warning!
Do not use the dual gland nut cover plate if you are wiring the loudspeaker with NL4 connector. NL4 connector is not compatible with install solutions that require weatherization.

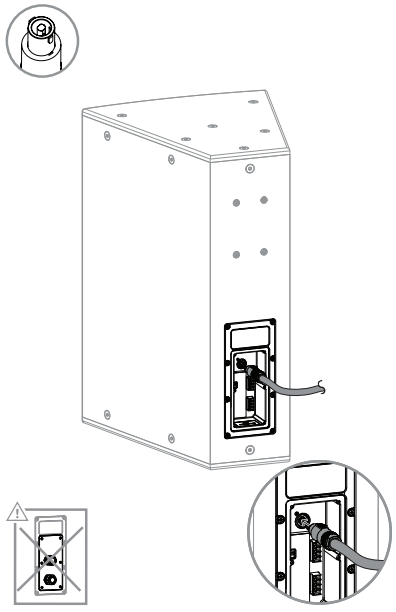
EVF G2 | EVH G2 models provide a single, four-conductor twist-lock NL4 connector for connection to pre-terminated NL4FXX-W type cable.

To wire the loudspeaker using the NL4 connector:

1. Under **X-OVER MODE**, switch to the required crossover mode**: BI-AMP** or **PASSIVE.**
2. Wire the NL4-type connector accordingly.
   Follow the instructions on the PINOUT table.



3. Connect the NL4-type cable to the NL4 input at the top of the input panel.



4.3.2 Using the Euroblock connector

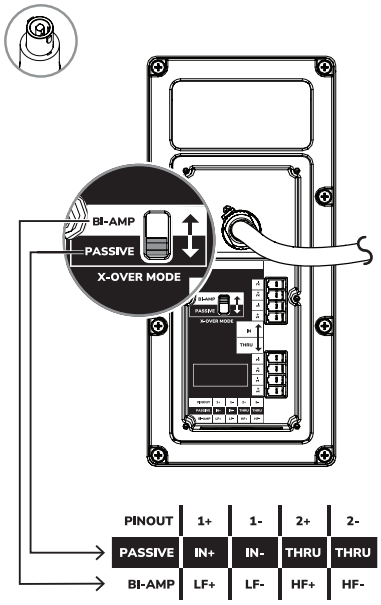
EVF G2 | EVH G2 models provide a removable 10 AWG Phoenix/Euroblock connector with:

– 4 connection points for passive or bi-amp wiring
– 4 additional connection points for parallel pass through

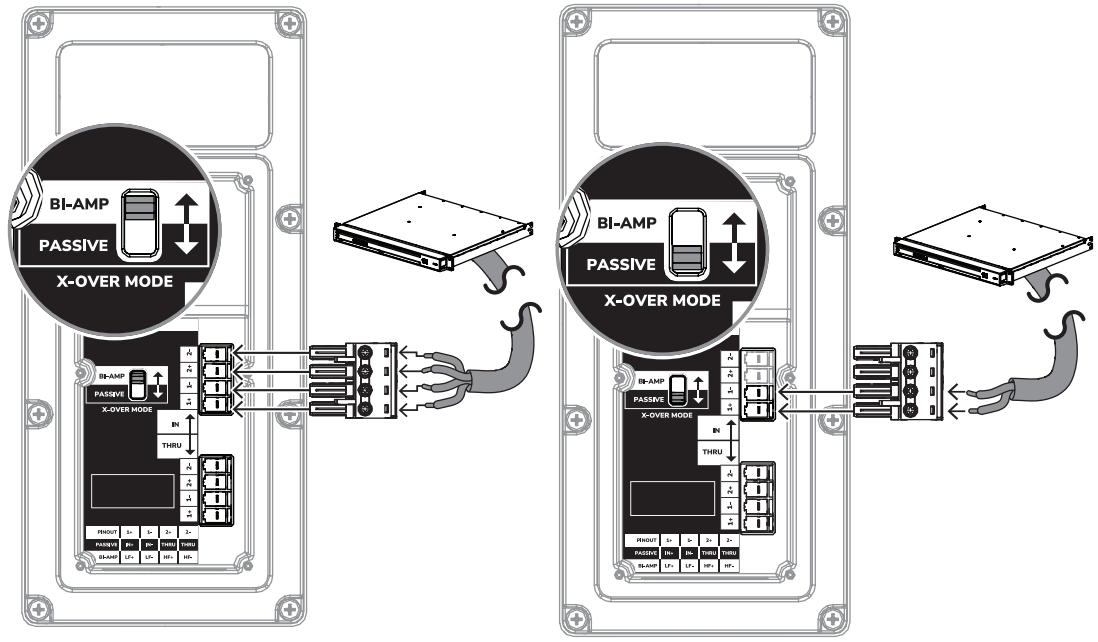
To wire the loudspeaker using the Euroblock connector:

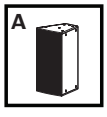
1. Under **X-OVER MODE**, switch to the required mode**: BI-AMP** or **PASSIVE.**

2. Wire the Euroblock connector accordingly.
   Follow the instructions on the PINOUT table.

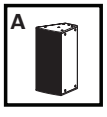


3. Plug the Euroblock connector into the loudspeaker.



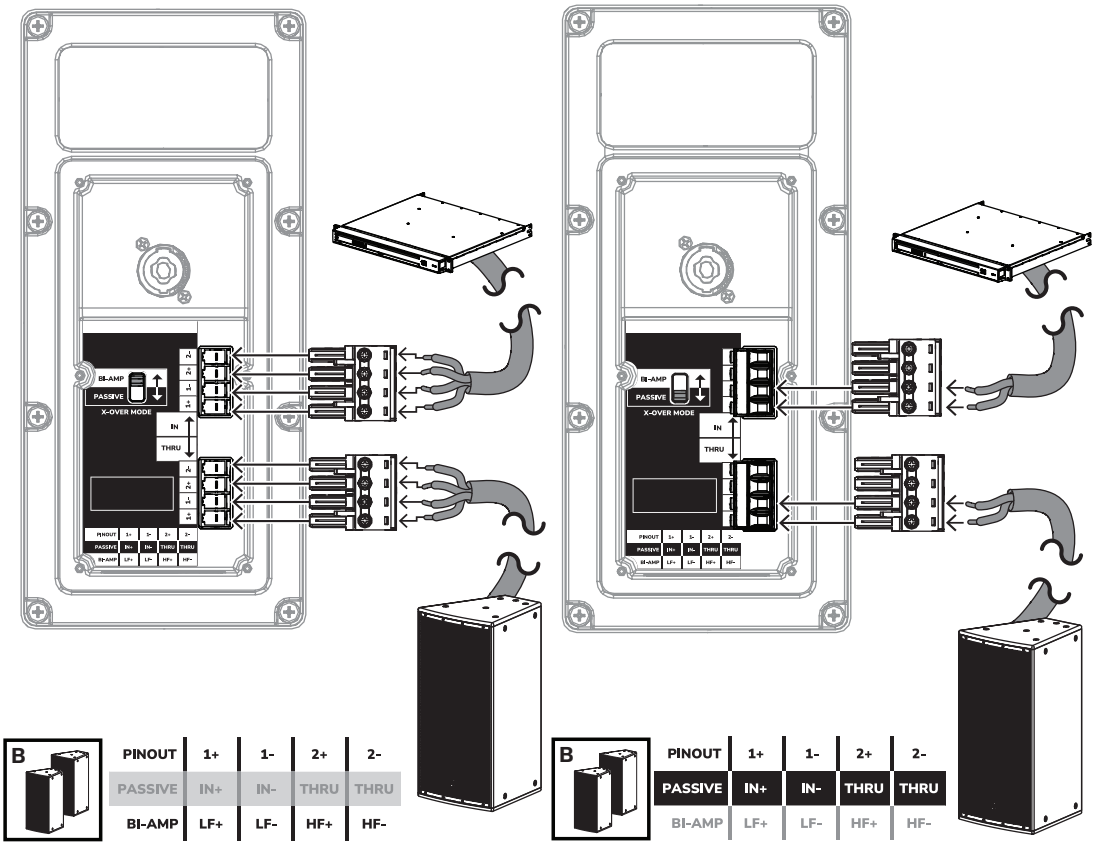


PINOUT	1+	1-	2+	2-
PASSIVE	IN+	IN-	THRU	THRU
BI-AMP	LF+	LF-	HF+	HF-



PINOUT	1+	1-	2+	2-
PASSIVE	IN+	IN-	THRU	THRU
BI-AMP	LF+	LF-	HF+	HF-

4. If wiring a second loudspeaker in parallel, connect conductors to the **THRU** connector in the same order, and then complete an identical connection on the parallel loudspeaker.



4.3.3 Using the weather cover

All models of EVF G2 | EVH G2 include a dual gland nut cover plate that seals the input cup, protecting the loudspeaker connections from extreme weather conditions.
The dual gland nut cover plate accommodates a four-conductor AWG 10 cable through each of two gland nuts, but also seals sufficiently to two-conductor AWG 12 cables. In single cable installations the provided gland nut plug seals the unused opening.

Warning!
Do not use the dual gland nut cover plate if you are wiring the loudspeaker with NL4 connector. NL4 connector is not compatible with install solutions that require weatherization.

To wire the speaker with two cables:

1. Loosen both gland nuts.
2. Push the cable through the gland nuts.
3. Wire the Euroblock connector.
4. Plug the Euroblock connector into the speaker.
5. Insert the six screws into the dual gland nut cover plate.
   Loosely tighten the six screws to keep the cover plate in place.
6. Tighten all six screws to secure the cover plate.
   Ensure the cover plate is secure.
7. Adjust the wire length.

8. Tighten the gland nuts.

To wire the speaker with one cable:

1. Loosen both gland nuts.
2. Push the cable through one of the gland nuts.
3. Push the included gland nut plug in the other gland nut.
4. Tighten the gland nut with the plug to seal it.
5. Wire the Euroblock connector.
6. Plug the Euroblock connector into the speaker.
7. Insert the six screws into the dual gland nut cover plate.
   Loosely tighten the six screws to keep the cover plate in place.
8. Tighten all six screws to secure the cover plate.
   Ensure the cover plate is secure.
9. Adjust the wire length.
10. Tighten the remaining gland nut.

4.4 Removing and replacing the grille

EVF G2 | EVH G2 models are equipped with front-serviceable grilles, allowing loudspeaker maintenance to be performed from the front, whether the enclosure is ground-stacked or flown. The grille must be removed to service the transducers or to rotate the waveguide assembly, which allows the loudspeaker's coverage pattern to be rotated 90° to suit installation requirements.

Tools required

– Phillips #2 screwdriver

To remove the grille:

1. While supporting the grille, remove all screws from the front of the grille to prevent it from falling away from the loudspeaker.
2. Carefully pull the grille away from loudspeaker, taking care not to damage the weather seals adhered along all four edges of the grille.
3. Place the grille in a safe location where the finish will not be scratched while service is being performed.

To replace the grille:

1. Position the grille in its original location, ensuring that all weather seals are properly seated between the grille edges and the cabinet.
2. Install all grille screws, starting at the center of the grille and working outward toward the corners.
3. Hand-tighten all screws. Do not use an uncalibrated power drill to tighten grille screws. Screw torque must not exceed 10 in-lb (1.2 N m)

Caution!

The pilot holes for the grille screws are designed for a maximum of five (5) tightening cycles at 10 in/lb (1.2 N m). Exceeding this limit may reduce the screw's ability to remain secure during extended use. If any degradation of the screw holes is observed, Electro-Voice recommends applying a small amount of water-resistant wood adhesive into the holes to re-stabilize the wood.

4.5 Rotating high-frequency and mid-band waveguides

Some EVF G2 | EVH G2 loudspeakers are shipped with the wider waveguide coverage angle oriented horizontally when the loudspeaker is in its upright position. If required, the waveguide may be rotated so that the wider coverage angle is oriented vertically. All high-frequency waveguides are marked with their horizontal and vertical coverage angles, allowing the current orientation to be easily identified.

Tools required

– Phillips #2 screwdriver

To rotate the high-frequency waveguide:

1. Remove the grille by following the procedure described in *Removing and replacing the grille, page 25*.
2. Remove the eight screws securing the compression-driver/waveguide assembly.
3. Rotate the waveguide assembly 90°.
4. Reinstall the waveguide assembly and hand-tighten all screws.

To rotate mid-band waveguides (EVH-15/66, EVH-15/95, and EVH-15/99 models only):

1. Remove the screws securing the high-frequency waveguide mounting frame to the front of the EVH G2 cabinet.
2. Remove the four screw from each low-frequency waveguide wedge, releasing the wedges from the horn.
3. Reposition the low-frequency waveguide wedges 90° from their factory orientation
4. Reinstall all screws and hand-tighten securely.
5. Reinstall the high-frequency waveguide frame it its original position.
6. Reinstall the grille by following the procedure described in *Removing and replacing the grille, page 25*.

5 Designing a cluster

5.1 General aiming and placement guidelines

Aim loudspeakers toward the audience and away from reflective room surfaces. People are effective absorbers of sound, while room surfaces are often highly reflective.
Correctly aiming loudspeakers toward listeners and away from reflective surfaces provides the following benefits:

- The audience receives sufficient high-frequency energy for good speech intelligibility and musical clarity.
- Reflective surfaces do not energize the room with intelligibility-degrading reverberation.

For sound reinforcement applications, loudspeakers are typically mounted high above a stage or platform and aimed downward and outward toward the audience. This placement minimizes the distance difference between the closest listeners and those farthest from the source, helping to promote more uniform sound coverage.
A typical portable loudspeaker mounted on a short (approximately 6-ft) stand cannot achieve the same level of coverage uniformity, because the farthest audience members are significantly farther from the loudspeaker than those in the front rows. Sound pressure level decreases by approximately 6 dB each time the distance from the loudspeaker is doubled. This relationship is described by the following equation:

- Level loss (dB) = 20 $\log_{10}$ (closest distance ÷ farthest distance)

Refer to Coverage-uniformity target for guidance on the audibility of various sound level differences across the audience area.

5.2 Choosing between EVF G2 and EVH G2 full-range systems

When the reverberation time of a room - formally referred to as T60, the time required for sound energy to decay by 60 dB after the source stops - exceeds 2.0 to 2.5 seconds at mid frequencies, the horn-loaded EVH G2 series is recommended.
The EVH G2 incorporates a low-frequency horn with a mouth size large enough to control the rated coverage pattern down to 500 Hz. This feature promotes clarity by keeping more sound away from reflective room surfaces. In comparison, the smaller 12-inch-square horns and direct-radiating woofers used in the EVF G2 series provide less pattern control at lower frequencies, allowing more sound energy to interact with the room and contribute to excessive reverberation.
Horn-loading also enables EVH G2 models - particularly those with the narrowest coverage patterns - to produce higher maximum output levels than EVF G2 models. As a result, EVH G2 systems are a better choice when sound pressure level (SPL) requirements exceed the capabilities of the EVF G2 series and when alternative solutions, such as X-Line Advance or MTS systems, are not appropriate for the installation.

5.2.1 Directivity break frequency defined

Below a certain frequency, the mouth size of a waveguide is no longer large enough to maintain the nominal coverage angle and the coverage angle gets wider and wider as frequency is decreased. The frequency at which this occurs is called the “directivity break frequency” (fb) and is inversely proportional to the size of the waveguide mouth and the nominal coverage angle of the waveguide. The directivity break frequency can be approximated by the following formula:

- fb (Hz) = 1,000,000/[angle (degrees) x dimension (inches)].

5.3 Coverage patterns, multiple coverage patterns, and the need for loudspeaker clusters

Loudspeaker coverage patterns (or coverage angles) are typically defined at the points where the sound pressure level is 6 dB below the maximum on-axis output. To help ensure that acoustic energy is directed primarily toward the absorptive audience - and away from reflective surfaces - while accommodating a wide range of trim heights and venue geometries, EVF G2 | EVH G2 series loudspeakers are available in multiple coverage patterns.

Even with this variety of coverage options, it is often impractical for a single loudspeaker to uniformly cover the entire audience area. As a result, two or more loudspeakers are commonly grouped into clusters and aimed in different directions to provide consistent coverage across the listening area.

5.3.1 Basic clustering guidelines

The aiming angles of loudspeakers within a cluster are determined not only by room geometry, but also by the selected horizontal and vertical coverage patterns. A preliminary system design can be developed using plan and elevation views of the venue, representing each loudspeaker by its rated coverage angles (for example, 60° x 40°).

- A wide, or “short throw”, coverage pattern such as 120° x 60° is well suited for aiming downward into the front seating areas of a rectangular venue, providing broad left-to-right coverage.
- Narrower coverage patterns, such as 60° x 40° or 40° x 30°, are typically used as “long throw” devices. These patterns allow sound to reach the rear of the audience while minimizing excessive sound levels in the front rows.

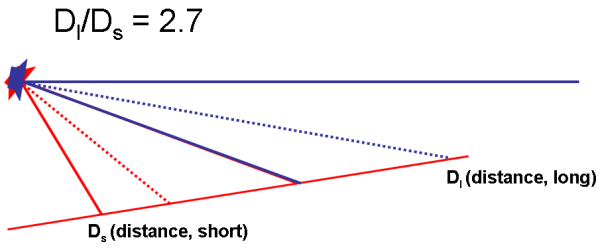
For more accurate coverage modeling, EASE data is available on product pages and in the Downloads section of the Electro-Voice website.

A common technique for increasing horizontal coverage is to cluster two loudspeakers side by side and aim them so that their horizontal coverage patterns meet but do not overlap. Each loudspeaker is nominally 6 dB down at the edge of its coverage pattern. When properly aimed, the outputs of the two systems will sum at the pattern intersection to approximately the 0-dB on-axis level. For example, two loudspeakers with 60° horizontal coverage can be clustered with their acoustic axes separated by 60°.

If the two loudspeakers are underlapped - for example, with their axes separated by 75° - the combined coverage angle will increase, but sound levels near the center of the array will decrease. Conversely, if the loudspeakers are overlapped to a significant degree, such as with axes separated by only 45°, the combined coverage angle will be reduced and interference effects discussed in Multiple-source interference in clusters will increase.

The degree to which long-throw devices can extend coverage uniformity is limited. A single loudspeaker will typically provide usable coverage to a distance approximately twice that of the distance to the closest front row.

Adding a long-throw loudspeaker will typically extend this coverage to approximately three times the distance to the nearest seat.



For coverage requirements beyond this range, additional loudspeakers may be suspended above the audience and time-delayed relative to the main system so that the perceived sound source remains at the front of the venue. Detailed design of delayed systems is beyond the scope of this manual and should be undertaken by experienced sound system designers.

5.4 Coverage-uniformity target

A reasonable target for sound-level uniformity is ±3 dB throughout the audience area, particularly in the 2-kHz and 4-kHz octave bands, which are most critical for speech intelligibility. Similar uniformity should also be achieved in the 8-kHz octave band, which contributes to high-frequency detail and perceived “sparkle”.
As a point of reference, a 1-dB difference in level is nearly imperceptible, a 3-dB difference is noticeable but not a large change, a 6-dB difference is clearly noticeable, and a 10-dB difference is perceived as approximately twice or half as loud. The ±3-dB uniformity target reflects these perceptual differences.

5.5 Multiple-source interference in clusters

Whenever two or more loudspeaker sources serve a single venue, some audience locations will receive strong signals from multiple sources.
Consider two EVF-12/64 G2 systems clustered side by side, with their axes separated by 60°, forming a 120° x 40° horizontal cluster. If these systems maintained their rated coverage patterns into the low frequency range, there would be essentially no interference. However, the 12-inch-square waveguides used in the EVF G2 series begin to lose directivity control at approximately 2 kHz and below, causing the coverage to “balloon” outward. This behavior is described in Directivity break frequency defined.
On the cluster axis, the output of both systems sums perfectly, since the listener is equidistant from each system and the sound arrives simultaneously.

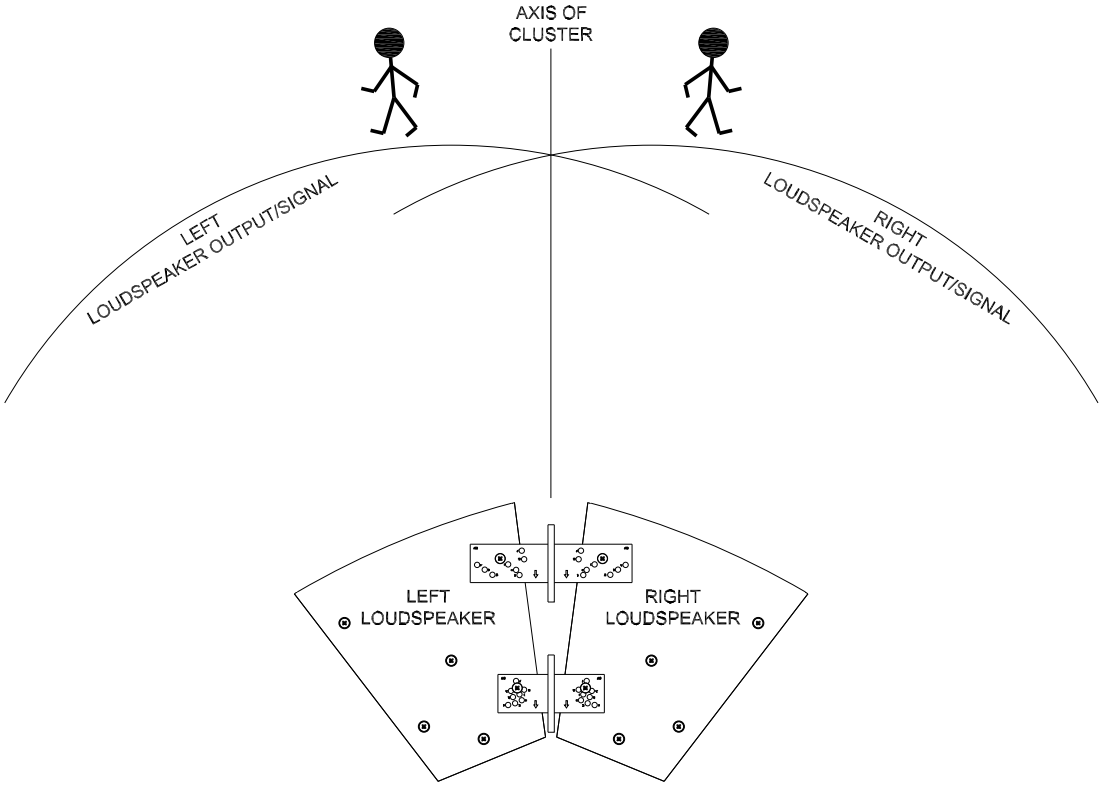


Figure 5.1: The two loudspeaker sources sum perfectly only on the axis of the cluster

This is the axis-of-cluster line. As the listener moves off-axis to the left, the left loudspeaker becomes closer and its sound arrives earlier. At certain angles and frequencies, the resulting time difference is equivalent to reversing the polarity of one signal, causing a complete cancellation at that frequency. Given the dimensions of typical compact loudspeaker systems and their close spacing when clustered, the first several interference nulls occur right in the middle of the vocal frequency range. A frequency response with these evermore-closely spaced nulls is known as a “comb filter” response, named for its visual resemblance to a comb.

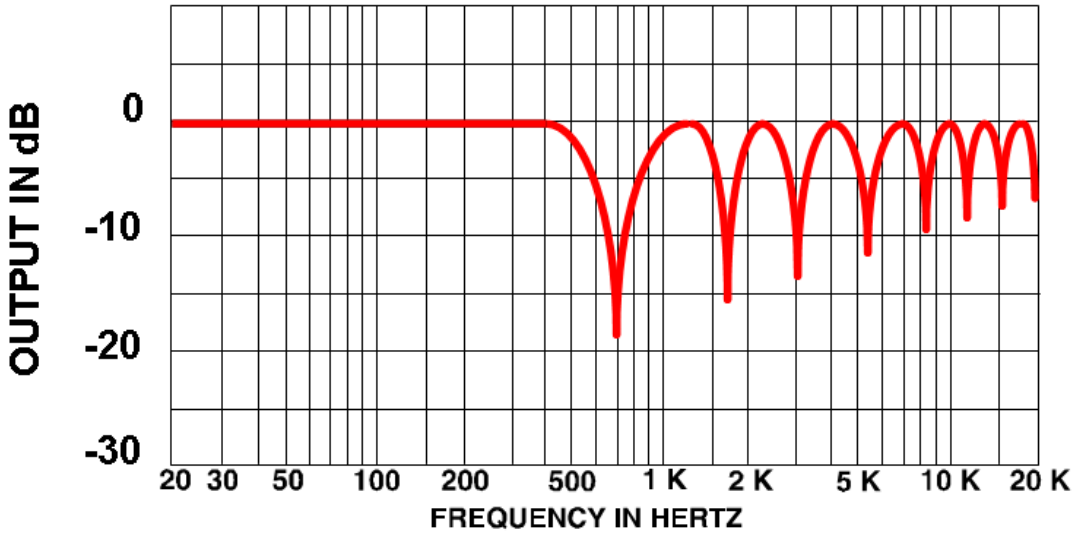


Figure 5.2: Cancellations due to arrival-time differences

Example 1

If one of the null frequencies is selected and the horizontal polar response is measured, the result resembles the blue polar trace in the lower center graph. In this view, the cluster axis points upward (+X). Maximum output is achieved on this axis, since both signals arrive simultaneously. But there are off-axis problems. Although the overall coverage of the cluster is about 120° (6 dB down), two deep nulls occur at approximately 20° on either side of the cluster axis.

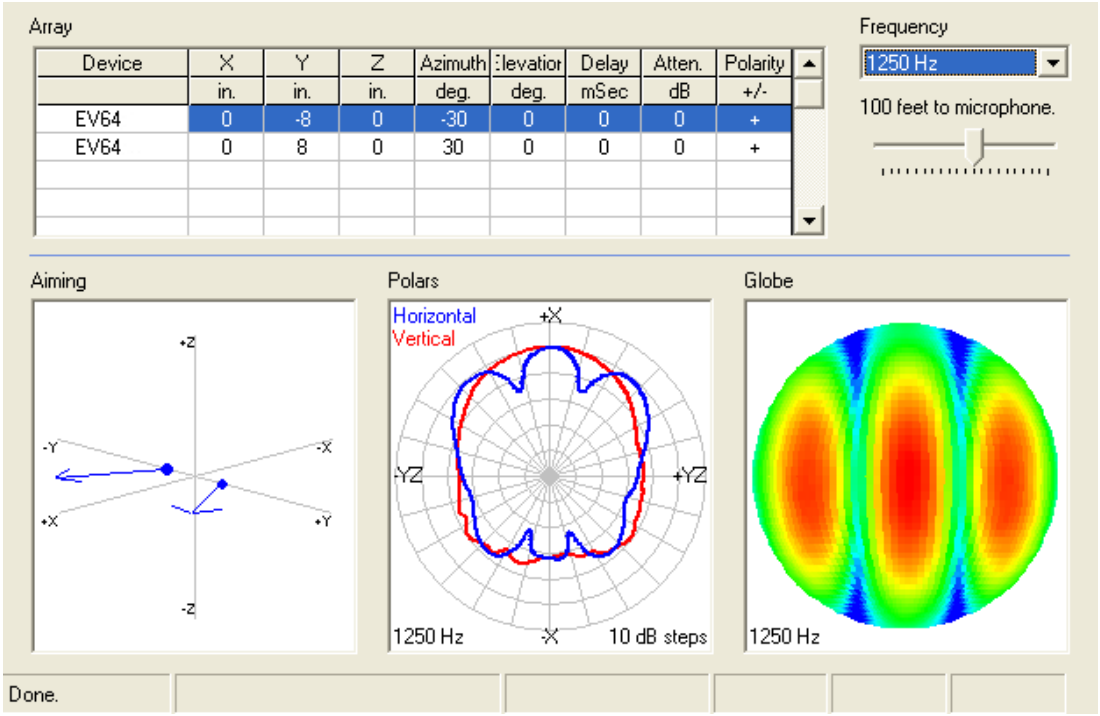


Figure 5.3: Example 1

Example 1 shows the horizontal polar response (blue center plot) of two closely clustered 60° x 40° loudspeakers aimed 60° apart, showing the off-axis nulls at 1250 Hz caused by multiple-source interference.

Example 2

At higher frequencies, the interference patterns become more densely packed, which essentially eliminates their audibility.

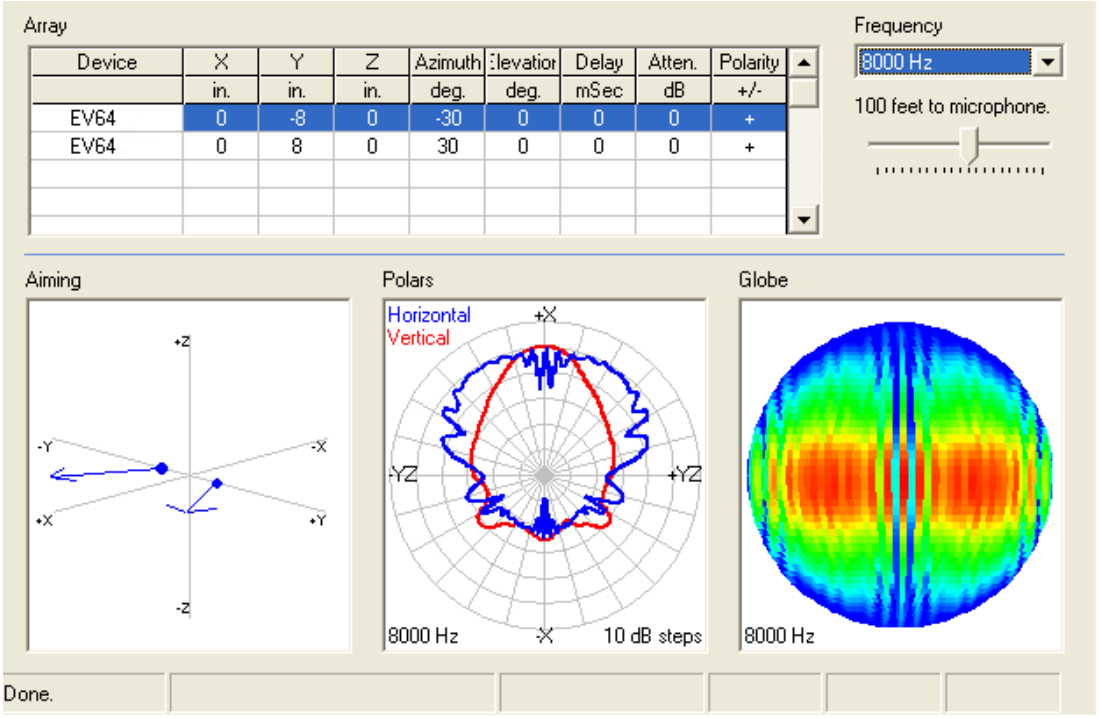


Figure 5.4: Example 2

Example 2 shows the horizontal polar response (blue center plot) of two closely clustered 60° x 40° loudspeakers aimed 60° apart, showing multiple densely packed off-axis nulls at 8000 Hz caused by multiple-source interference.

5.5.1 Reducing multiple-source interference

Multiple-source interference cannot be eliminated, but it can be substantially reduced. Systems that use radiating devices large enough to maintain their rated coverage angles down to relatively low frequencies - such as the horn-loaded EVH G2 series, which maintains its coverage down to 500 Hz - will exhibit less interference when clustered.

Additionally, doubling the distance between the two systems in Example 3 produces multiple interference nulls that are more densely packed than those in Example 1, reducing the audibility of the interference.

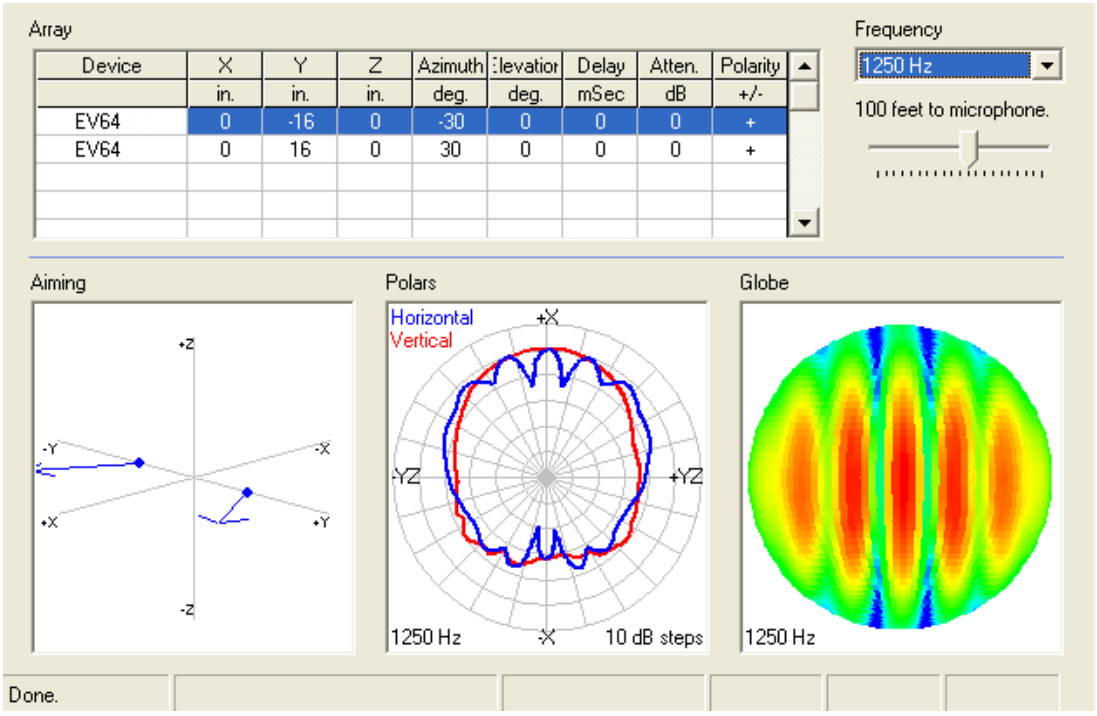


Figure 5.5: Example 3

Example 3 shows the horizontal polar response (blue center plot) of two 60° x 40° loudspeakers aimed 60° apart, with double the distance between grille centers compared to Examples 1 and 2. The result is more densely packed 1250-Hz off-axis nulls caused by multiple-source interference.

Another method for reducing interference is applying signal delay of up to 8 milliseconds to one of the two systems. This approach requires a separate DSP (digital signal processor) drive to the delayed system. Example 4 shows the dramatic smoothing achieved at 1250 Hz. Note that the systems remain closely spaced, as in Example 1.

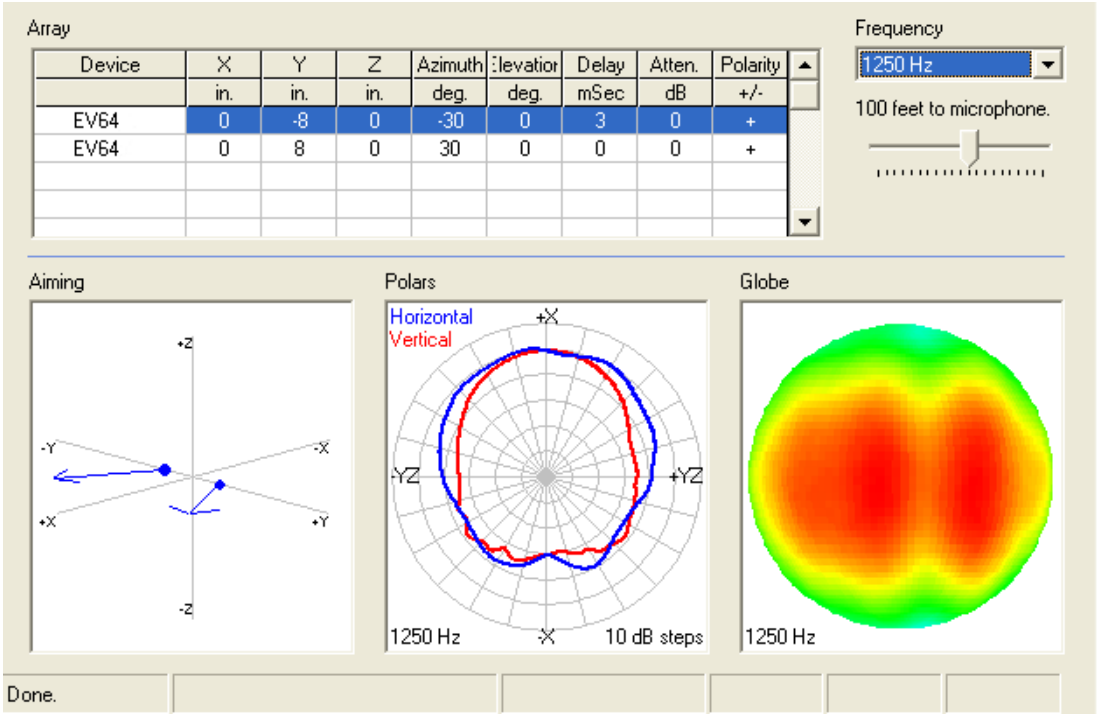


Figure 5.6: Example 4

Example 4 shows the horizontal polar response (blue center plot) of two closely clustered 60° x 40° loudspeakers aimed 60° apart, with multiple-source interference smoothed by a 3 ms delay applied to one loudspeaker.

In clusters containing more than two systems, adjacent loudspeakers are usually delayed relative to one another. While the effect can be predicted with appropriate modeling software (such as EASE 4.2), actual delay values are typically established in the field during system setup and commissioning, using a combination of listening tests and acoustic measurements.

6 Maintenance

Warning!
Loudspeakers permanently installed outdoors must be regularly inspected to verify that all components and suspension remain in working condition. Discontinue use immediately and contact a qualified service provider if inspection identifies any deterioration of the product exterior or severe degradation of sound-quality or output.

Avoid painting the loudspeakers
EVF G2 | EVH G2 models use an extremely robust poly-urea coating that is designed to resist fading and staining for years to come. This also means that the exterior coating is especially good at not bonding to paint applied after manufacturing. For alternate factory color options, please contact your authorized Electro-Voice representative for more information.

7 Technical data

7.1 EVF G2 12

	Horn pattern				
	60° x 40°	**60° x 60°**	**90° x 50°**	**90° x 90°**	**120° x 60°**
Frequency response (-3 dB)[1]	57 Hz - 18 kHz				
Frequency range (-10 dB)[1]	48 Hz - 20 kHz				
AES75 Linear SPL[2]	115 dB	114 dB	115 dB	114 dB	115 dB
Continuous SPL at full power	121 dB	120 dB	121 dB	120 dB	120 dB
AES75 Peak SPL[2]	134 dB	132 dB	134 dB	132 dB	132 dB
Coverage angle H x V	60° x 40°	60° x 60°	90° x 50°	90° x 90°	120° x 60°
Power handling (continuous)	400 W				
Power handling (program)	800 W				
Peak input voltage[3]	130 V				
Peak input voltage[4]	62 V				
Peak input voltage[5]	130 V				
Nominal impedance	8 Ω				
Minimum impedance	6.4 Ω				
Recommended high-pass	50 Hz				
Connector type	10 AWG Euroblock NL4				
Suspension points	(22) M10 hard points				
IP rating[6]	IP55				
Operating temperature	-20° C - +50° C				
Storage temperature	-40° C - +60° C				
Color	Black (RAL9005) White (RAL9003)				
Dimensions (H x W x D)	30.3 in x 16.0 in x 16.4 in				

	Horn pattern				
	60° x 40°	**60° x 60°**	**90° x 50°**	**90° x 90°**	**120° x 60°**
Dimensions (H x W x D)	769 mm x 407 mm x 417 mm				
Weight	67 lb				
Weight	30.5 kg				
Shipping weight	78 lb				
Shipping weight	35.5 kg				
Included hardware	Dual gland nut cover plate "Horn-rotated" label sticker				

[1] Full-range preset, measured in full-space (4π)
[2] Measured per AES75-2023
[3] Passive
[4] Bi-amp HF
[5] Bi-amp LF
[6] Only FW models in outdoor, wet, or salty environments

For information on individual frequency response and coverage plots, visit the product webpage.

7.2 EVF G2 15

	Horn pattern			
	60° x 40°	**60° x 60°**	**90° x 50°**	**90° x 90°**
Frequency response (-3 dB)[1]	50 Hz - 18 kHz			
Frequency range (-10 dB)[1]	40 Hz - 20 kHz			
AES75 Linear SPL[2]	117 dB	117 dB	117 dB	117 dB
Continuous SPL at full power	124 dB	124 dB	124 dB	124 dB
AES75 Peak SPL[2]	136 dB	136 dB	135 dB	135 dB
Coverage angle H x V	60° x 40°	60° x 60°	90° x 50°	90° x 90°
Power handling (continuous)	400 W			
Power handling (program)	800 W			
Peak input voltage[3]	130 V			
Peak input voltage[4]	62 V			

	Horn pattern			
	60° x 40°	**60° x 60°**	**90° x 50°**	**90° x 90°**
Peak input voltage[5]	130 V			
Nominal impedance	8 Ω			
Minimum impedance	6.4 Ω			
Recommended high-pass	43 Hz			
Connector type	10 AWG Euroblock NL4			
Suspension points	(22) M10 rigging points			
IP rating[6]	IP55			
Operating temperature	-20°C - +50°C			
Storage temperature	-40°C - +60°C			
Color	Black (RAL9004) White (RAL9003)			
Dimensions (H x W x D)	30.3 in x 18.5 in x 20.4 in			
Dimensions (H x W x D)	769 mm x 470 mm x 518 mm			
Weight	84 lb			
Weight	38 kg			
Shipping weight	96 lb			
Shipping weight	43.5 kg			
Included hardware	Dual gland nut cover plate "Horn-rotated" label sticker			

[1] Full-range preset, measured in full-space (4π)
[2] Measured per AES75-2023
[3] Passive
[4] Bi-amp HF
[5] Bi-amp LF
[6] Only FW models in outdoor, wet, or salty environments

For information on individual frequency response and coverage plots, visit the product webpage.

7.3 EVH G2 15

	Horn pattern				
	40° x 30°	**60° x 40°**	**60° x 60°**	**90° x 50°**	**90° x 90°**
Frequency response (-3 dB)[1]	62 Hz - 18 kHz				
Frequency range (-10 dB)[1]	55 Hz - 20 kHz				
AES75 Linear SPL[2]	123 dB	123 dB	122 dB	121 dB	121 dB
Continuous SPL at full power	129 dB	129	128 dB	127 dB	127 dB
AES75 Peak SPL[2]	141 dB	141 dB	140 dB	139 dB	139 dB
Coverage angle H x V	40° x 30°	60° x 40°	60° x 60°	90° x 50°	90° x 90°
Power handling (continuous)	400 W				
Power handling (program)	800 W				
Peak input voltage[3]	130 V				
Peak input voltage[4]	62 V				
Peak input voltage[5]	130 V				
Nominal impedance	8 Ω				
Minimum impedance	6 Ω				
Recommended high-pass	50 Hz				
Connector type	10 AWG Euroblock NL4				
Suspension points	(30) M10 rigging points				
IP rating[6]	IP55				
Operating temperature	-20°C - +50°C				
Storage temperature	-40°C - +60°C				
Color	Black (RAL9004) White (RAL9003)				
Dimensions (H x W x D)	30.3 in x 18.5 in x 20.4 in				
Dimensions (H x W x D)	769 mm x 470 mm x 518 mm				

	Horn pattern				
	40° x 30°	**60° x 40°**	**60° x 60°**	**90° x 50°**	**90° x 90°**
Weight	150 lb		162 lb		
Weight	68 kg		73.5 kg		
Shipping weight	205 lb		217 lb		
Shipping weight	93 kg		98.5 kg		
Included hardware	Dual gland nut cover plate "Horn-rotated" label sticker				

[1] Full-range preset, measured in full-space (4π)
[2] Measured per AES75-2023
[3] Passive
[4] Bi-amp HF
[5] Bi-amp LF
[6] Only FW models in outdoor, wet, or salty environments

For information on individual frequency response and coverage plots, visit the product webpage.

7.4 EVF G2 215S

Frequency response (-3 dB)[1]	38 Hz - 100 Hz
Frequency range (-10 dB)[1]	32 Hz - 140 Hz
AES75 Linear SPL[2]	126 dB
Continuous SPL at full power	128 dB
AES75 Peak SPL[2]	137 dB
Nominal coverage	360°
Power handling (continuous)	800 W
Power handling (program)	1600 W
Peak input voltage	130 V
Nominal impedance[3]	4 Ω
Nominal impedance[4]	8 Ω
Minimum impedance[3]	3.4 Ω
Minimum impedance[4]	6.8 Ω
Preset high-pass	32 Hz
Connector type	10 AWG Euroblock NL4
Suspension points	(28) M10 rigging points
IP rating[5]	IP55

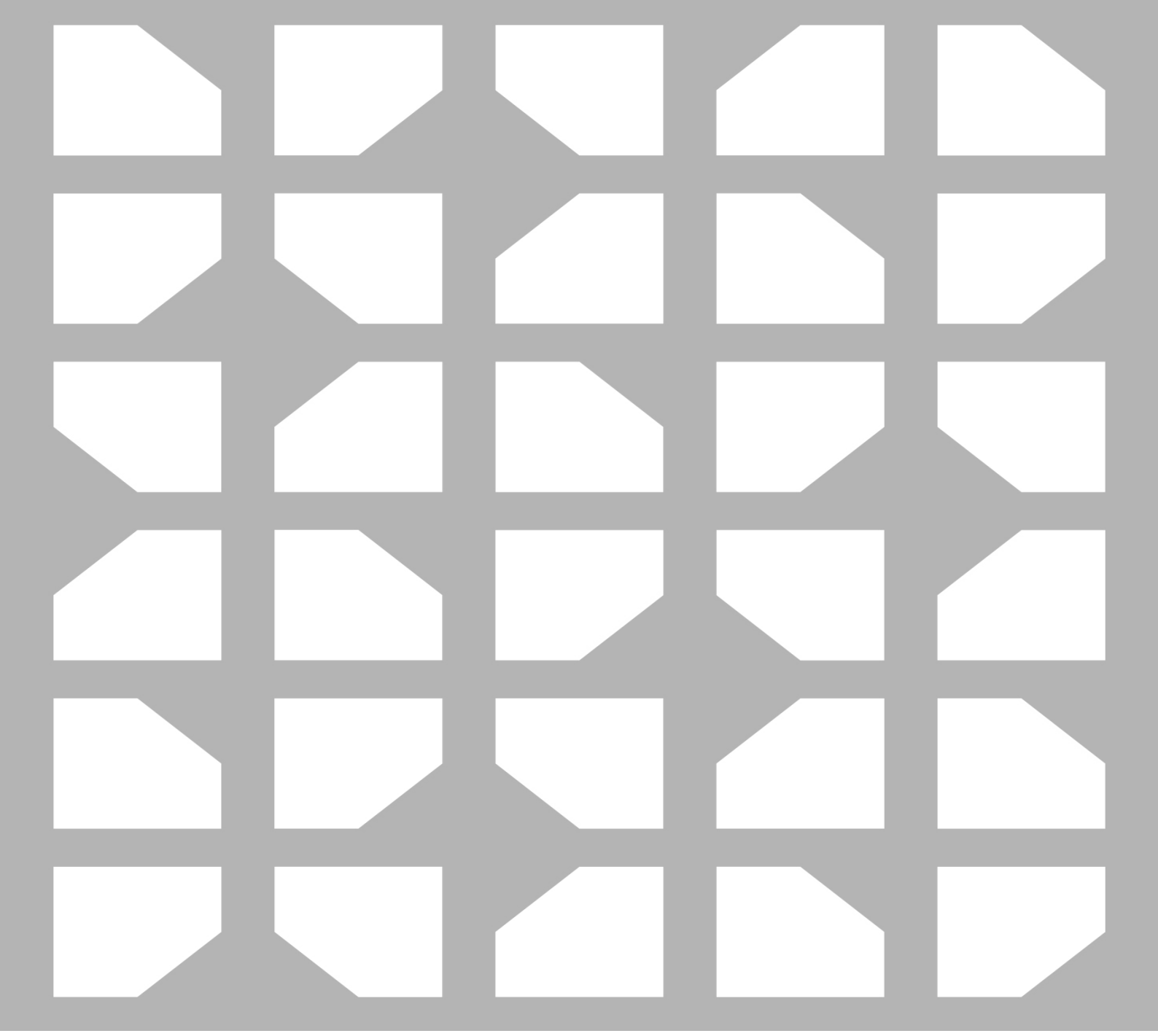
Operating temperature	-20°C - +50°C
Storage temperature	-40°C - +60°C
Color	Black (RAL9005) White (RAL9003)
Dimensions (H x W x D)	30.3 in x 26.5 in x 28.6 in
Dimensions (H x W x D)	769 mm x 674 mm x 726 mm
Weight	152 lb
Weight	69 kg
Shipping weight	92.5 kg
Shipping weight	203.5 lb
Included hardware	Dual gland nut cover plate

[1] 100 Hz preset, measured in full-space (4π)
[2] Half space, measured per AES75-2023
[3] Parallel
[4] Dual
[5] Only FW models in outdoor, wet, or salty environments

For information on individual frequency response and coverage plots, visit the product webpage.

8 Appendices

For information on rigging solutions, refer to the installation manual provided with each accessory.



Electro-Voice Dynacord LLC
12000 Portland Avenue South
MN 55337 Burnsville
USA
www.electrovoice.com

EU importer:
EVI Audio GmbH
Sachsenring 60
94315 Straubing
Germany

202605051721