



ISIS WideLine Loudspeaker User Manual

Manual del usuario para los altavoces ISIS WideLine

Manuel de l'utilisateur des haut-parleurs ISIS WideLine

ISIS WideLine-Lautsprecher – Benutzerhandbuch

ISIS WideLine 扬声器用户手册

WL2102

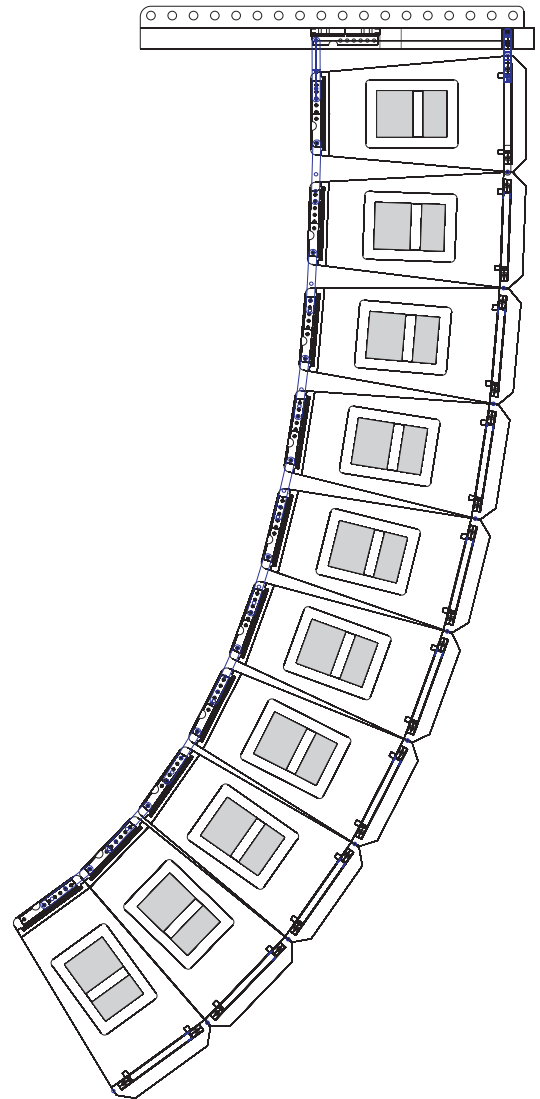
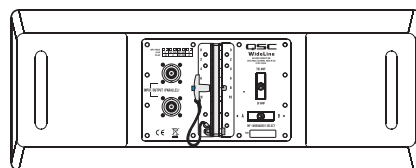
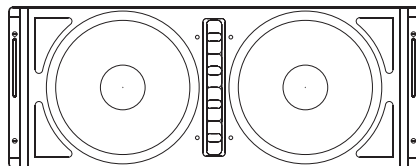
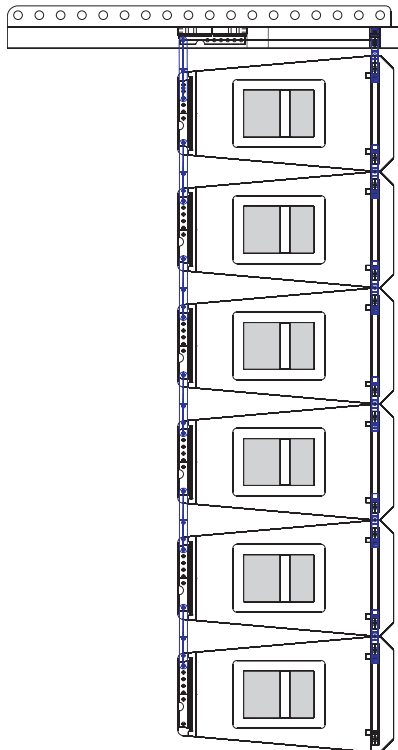
Cored Composite Enclosure

WL2102-w

Birch Plywood Enclosure

Stacking Frame

Fly Grid



TD-000227-00 rev.B

IMPORTANT SAFETY PRECAUTIONS

Install in accordance with QSC Audio Product's instructions and under the supervision of a licensed Professional Engineer.

WARNING!

Before placing, installing, rigging, or suspending any speaker product, inspect all hardware, suspension, cabinets, transducers, brackets and associated equipment for damage. Any missing, corroded, deformed, or non-load rated component could significantly reduce the strength of the installation, placement or array. Any such condition severely reduces the safety of the installation and should be immediately corrected. Use only hardware which is rated for the loading conditions of the installation and any possible short-term, unexpected overloading. Never exceed the rating of the hardware or equipment.

Consult a licensed, Professional Engineer regarding physical equipment installation. Ensure that all local, state and national regulations regarding the safety and operation of suspension equipment are understood and adhered to.

Warranty (USA only; other countries, see your dealer or distributor)

Disclaimer

QSC Audio Products, Inc. is not liable for any damage to amplifiers or any other equipment that is caused by negligence or improper installation and/or use of this loudspeaker product.

QSC Audio Products 3 Year Limited Warranty

QSC Audio Products, Inc. ("QSC") guarantees its products to be free from defective material and / or workmanship for a period of three (3) years from date of sale, and will replace defective parts and repair malfunctioning products under this warranty when the defect occurs under normal installation and use - provided the unit is returned to our factory or one of our authorized service stations via prepaid transportation with a copy of proof of purchase (i.e., sales receipt). This warranty provides that the examination of the return product must indicate, in our judgment, a manufacturing defect. This warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced. QSC shall not be liable for incidental and/or consequential damages. This warranty gives you specific legal rights. This limited warranty is freely transferable during the term of the warranty period.

Customer may have additional rights, which vary from state to state.

In the event that this product was manufactured for export and sale outside of the United States or its territories, then this limited warranty shall not apply. Removal of the serial number on this product, or purchase of this product from an unauthorized dealer, will void this limited warranty.

Periodically, this warranty is updated. To obtain the most recent version of QSC's warranty statement, please visit www.qscaudio.com.

Contact us at 800-854-4079 or visit our website at www.qscaudio.com.

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Introduction

The WideLine loudspeaker system has been designed to provide a compact system that has unique power handling, frequency response. Its primary uses include ballrooms, theatres, night clubs, houses of worship, and small to medium size events for the corporate and industrial markets.

WL2102 enclosures are constructed of lightweight cored-composite and weigh 70 lb (31.8 kg). WL2102-w enclosures are constructed of birch plywood and weigh 83 lb (37.7 kg). The hardware allows for simple vertical splay angle adjustment of 0, 2, 3, 4, 5, 6, 7, 8, 9, and 10° between enclosures.

Two array frames are available. The Stacking Frame is for suspended applications or stacking on top of QSC's 215SB or 215PCM subwoofers. The large array frame is for suspended or ground stack applications.

The WideLine system is suitable for stand alone applications as a full range, articulate, high fidelity, sound reinforcement product with the ability to reproduce almost any musical program without subwoofers or bass modules. It has bass response to 55 Hz (-3 dB) in a small format package. Its 3-way, bi amp or tri amp design keeps required amplification to a minimum.

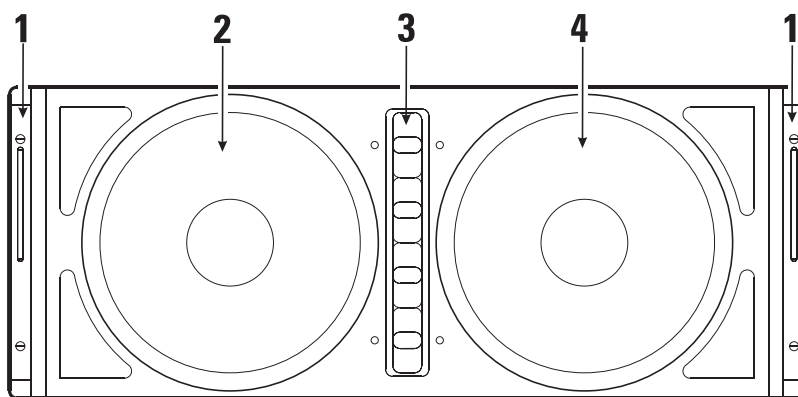
WideLine's exceptionally wide dispersion practically eliminates the need for "side" or "fill" hangs when used as the main array. Its wide dispersion also provides enhanced coverage when used as a center cluster or as a downfill or under-hang enclosure when used with larger format line array systems.

Wide dispersion is accomplished with a 3 inch (76mm) diaphragm, 1.4" (36mm) exit neodymium high-frequency driver mounted on a proprietary, patent-pending multiple aperture diffraction-slot waveguide. This device is the ideal linear source needed for wide angle line array performance.

Internal, mid-frequency shading can be switched to either 10" (254mm) transducer. Both transducers handle the low-frequencies, but only the non-shaded transducer handles the mids. This provides smoother pattern control at the mid-high crossover. With selectable shading, the enclosures can be used as house right or left by flipping the switch, not the enclosure.

WideLine users can also use a software tool called EASE Focus to aid in the design and implementation of a WideLine array. EASE Focus can calculate the number of enclosures required for a given space (venue), determine the optimum splay angle between those enclosures, calculate at what angle to set the array frame in a single (variable) pick-point or fixed suspension point application, and predict the acoustical response and sound pressure levels throughout the venue in a two-dimensional illustration. The software is available separately; downloadable from the QSC website or contact QSC for more information.

Like all QSC Audio products, WideLine design focuses on accurate audio performance, rapid set-up, and reduced labor requirements. Ease of transportation, assembly, use, and self-contained rigging hardware make WideLine the clear choice.



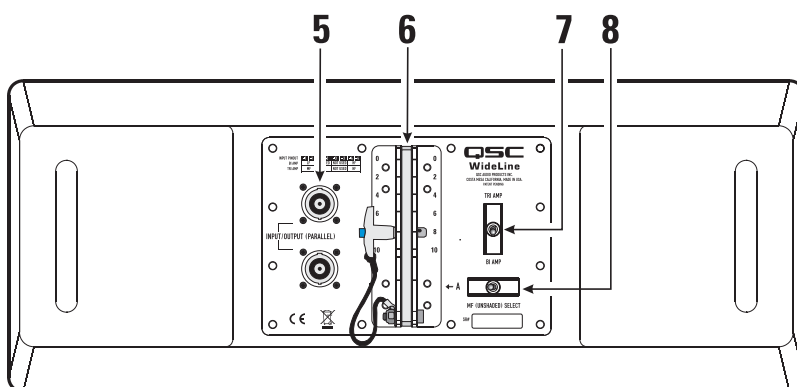
FRONT (grille removed)

1- Receiver tube (front left and right) with captive articulated joint (inside receiver tube) and ball-lock pins

2- Low frequency transducer B

3- High frequency transducer aperture

4- Low frequency transducer A



REAR

5- Input / output connectors (NL8)

6- Rear link, mounting block, and ball-lock pin

7- TRI AMP / BI AMP selector switch

8- MF (UNSHADED) SELECT switch

TRI AMP/BI AMP Switch

TRI AMP: Shading network is NOT applied (shading must be provided by upstream signal processing). Connect the full-range input signal to pins 1+ and 1-, connect the shaded (processed) signal to pins 2+ and 2-. To flip shaded transducer location, use the MF (UNSHADED) SELECT switch or alter signal processing. Default MF (UNSHADED) SELECT switch position for three way mode is position A; if put in position B, connections (per Table 1) to LF transducers A and B are interchanged.

BI AMP: The “full range” LF input is applied to pins 1+ and 1- and the -6dB per octave shading network is applied to one of the LF transducers using the MF (UNSHADED) SELECT switch.

TRI AMP

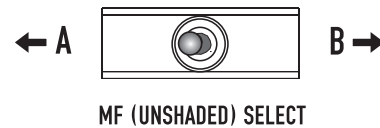


BI AMP

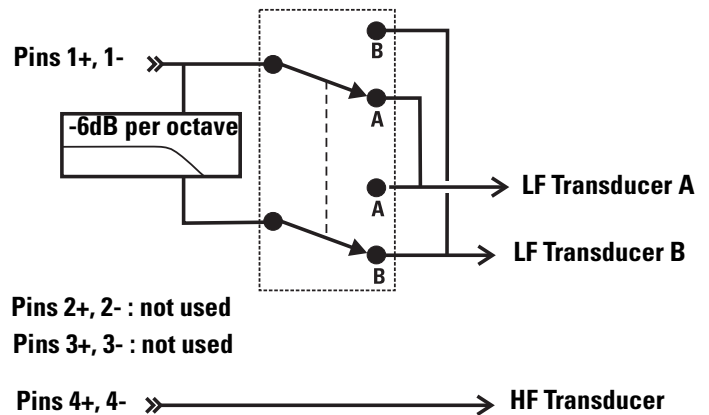
MF (UNSHADED) SELECT Switch

The WideLine is a three way design (shaded, non-shaded and high frequency) with shading provided by a passive network in BI AMP mode or upstream signal processing (DSP) in TRI AMP mode. This allows switch position selection for use as either “house left” or “house right”, without the need to invert boxes.

BI AMP: The shading switch allows either low frequency transducer to be selected as the shaded unit (bass only) by inserting a -6dB per octave network. The switch handle points to the side of the unshaded (full range) low-frequency transducer.

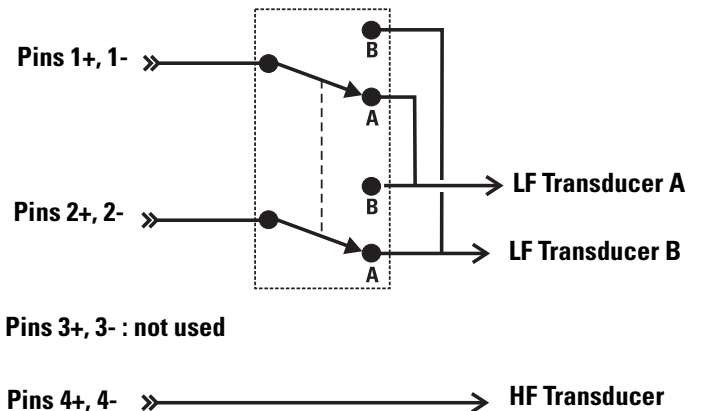


MF (UNSHADED) SELECT Switch: BI AMP Mode



TRI AMP: The internal -6dB per octave network is **NOT** applied to either LF transducer. Shading is accomplished with signal processing. The switch handle points to the side of the non-shaded (full range) low-frequency transducer **ONLY IF** the full range signal is applied to pins 1+ and 1- and the shaded signal to pins 2+ and 2-. Default position for TRI AMP mode is position A; if put in position B, connections to LF transducers A and B are interchanged.

MF (UNSHADED) SELECT Switch: TRI AMP Mode



Input Connections

The input connectors are a pair of Neutrik NL8's wired in parallel. Connections for bi amp and tri amp vary, see Table 1. The pin designations for the NL8FC cable connector is shown for reference, bottom right.



Note! In TRI AMP mode, the MF (UNSHADED) SELECT switch position determines the input connector wiring! Unexpected results may occur if switch positions and wiring are not strictly controlled.

The WideLine loudspeaker is not equipped with a crossover network. All signal processing must be done before connecting audio power to the loudspeaker. Do not connect full-range audio to the high-frequency transducer or damage may result!

INPUT PINOUT	•1	•1	•2	•2	•3	•3	•4	•4
BI AMP	LF		NOT USED		NOT USED		HF	
TRI AMP	MF		LF		NOT USED		HF	

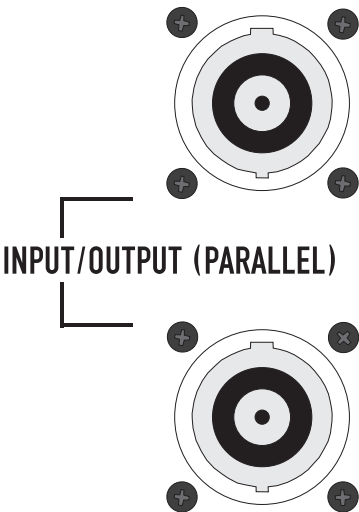


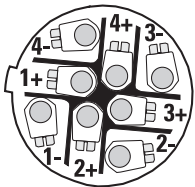
Table 1: Input Connector Wiring, BI AMP and TRI AMP Modes

Pin	BI AMP Internal Shading Network Inserted in Signal Path	TRI AMP MF (UNSHADED) SELECT Switch Position A Use External Processing for Shading,	TRI AMP MF (UNSHADED) SELECT Switch Position B Use External Processing for Shading,
1+	LF +	LF A +	LF B +
1-	LF -	LF A -	LF B -
2+	Not Used	LF B +	LF A +
2-	Not Used	LF B -	LF A -
3+	Not used	Not used	Not used
3-	Not used	Not used	Not used
4+	HF +	HF +	HF +
4-	HF-	HF-	HF -

Neutrik NL8FC Cable Connector Pinout

Shown, at right, is a diagram of the pin designation inside the Neutrik NL8FC connector. This information is for reference only. Diagram is of the connector as viewed from the wire-insertion end.

NL8FC pin designations- Plug viewed from the wiring side.



Rigging



Rules for Suspension

- Correct use of all suspension hardware and components is imperative in sound system rigging and deployment.
- Always calculate suspended loads before lifting to ensure suspension components and hardware are used within their respective load limits.
- Research local codes and regulations to fully understand the requirements for suspended loads in the venue in which the equipment is to be suspended.
- Use only shackle holes for suspension of array.
- Be absolutely certain of the integrity of any structural member intended to support suspended loads. Hidden structural members can have hidden structural weakness.
- Consult a professional mechanical or structural engineer licensed in the jurisdiction of the sound system installation to review, verify, and approve all attachments to the building or structure.
- Never assume anything- owner or third-party supplied suspension attachment points may not be adequate for the loads to be suspended.
- Employ the services of a professional rigger for hoisting, positioning, and attaching the equipment to the supporting structure.
- Always inspect all components (enclosures, suspension brackets, pins, frames, bolts, nuts, slings, shackles, etc.) for cracks, wear, deformation, corrosion, missing, loose, or damaged parts that could reduce the strength of the assembly before lifting. Discard any worn, defective, or suspect parts and replace them with new appropriately load-rated parts.

Shock Loading

When a load is either moved or stopped, its static weight is magnified. Sudden movements can magnify the static weight several times. This magnification of static weight is termed "shock loading". Shock loading poses a danger to equipment and workers. The effects of shock loading can be instantaneous, or they may remain undetected unless the equipment is visually damaged. Avoiding shock loading requires careful planning and knowledge of equipment, rigging, and lifting practices.

Shock loading of equipment and structures is usually confined to lifting and installation, but natural forces (winds, earthquakes) can impose shock loads several times the static load. This is why structures and suspension equipment must be capable of supporting several times the weight of the equipment suspended.

WideLine Working Load Limits and Design Factors

Table 1 lists the WideLine suspension components and provides Working Load Limit data at various Design Factors. The tabulated Design Factors are for static loads only. The choice of which Design Factor to use will depend upon the jurisdiction and venue of installation, as well as the conditions of suspension. Dynamic conditions are determined by unknown, installation-specific factors and should be referred to a Licensed Structural Engineer for clarification before proceeding with any suspension of the equipment. The data presented is based upon the listed component weights:

Component	Weight	4:1 Design Factor	5:1 Design Factor	7:1 Design Factor	10:1 Design Factor
WL2102	70 lb (31.8 kg)	2300 lb (1040 kg)	1800 lb (836 kg)	1300 lb (597 kg)	920 lb (418 kg)
WL2102-w	83 lb (37.7 kg)	2500 lb (1130 kg)	2000 lb (909 kg)	1400 lb (649 kg)	1000 lb (455 kg)
Fly Grid	87 lb (39.5 kg)	1800 lb (794 kg)	1400 lb (636 kg)	1000 lb (455 kg)	700 lb (318 kg)
Stacking Frame	33 lb (15.0 kg)	1800 lb (794 kg)	1400 lb (636 kg)	1000 lb (455 kg)	700 lb (318 kg)

Rigging

WideLine enclosures use a three-point suspension system. The system consists of front, left/right, captive articulated joints and a single rear link bar. Articulation is in 2° increments using the first location on the link bar. With the use of the second location, 1° degree increments can be obtained starting at 3° . The total available angular increments are: 0, 2, 3, 4, 5, 6, 7, 8, 9, and 10° . All pieces and locking pins remain with the enclosures. No ancillary items are needed to suspend the enclosures from the WideLine array frame. All ball-lock pins are equipped with a lanyard to help prevent loss.

Front Articulated Joint (Knuckle) Hardware

Expose the end of the articulated joint by locating the joint's retaining screw protruding from the front of the receiver tube and sliding it upward. The front captive joint will slide upward from the enclosure's receiver tube.

The exposed end of the articulated joint can now be inserted into the adjacent enclosure's receiver tube and locked into position by a locking pin. This is repeated for each side of the enclosure. Then the rear link bar can be rotated into position and pinned at the chosen degree increment.

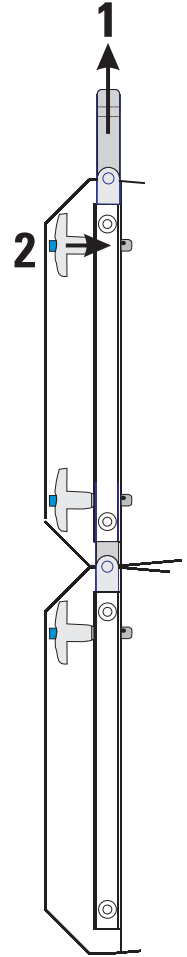
Rear Link (Angle Adjust) Hardware

The rear link is stored with the link folded between the sides of the block. To expose the link, remove the ball-lock pin and rotate the link into the desired position. Once positioned, the link is secured using the ball-lock pin of the adjacent enclosure.

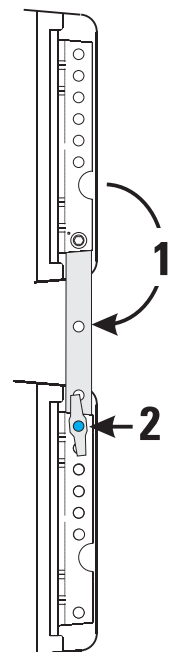
The rear link is marked with a thin, white line at the "normal" (0°) position and with a "+3" at the $+3^\circ$ position.

The additional ball-lock pin hole (located approximately midway on the link) is used for storing the link when folded into the enclosure's block for storage. The link may be pinned in place at the 0° or 8° location on the block when rotated into the storage position.

Front Articulated Joint- Slide the joint out of the receiver tube by sliding the retaining screw upward, then lock in place using the ball-lock pin.



Rear Link-Remove the ball lock pin from the storage position, then rotate the link downward to the adjacent enclosure. Lock in place using the ball-lock pin.



Adjusting the Angle Between Enclosures (Splay)

The illustration shows the rear pin block of two enclosures joined by the upper enclosure's rear link arm.

Use the first pin location (closest to the end) on the link arm for setting in normalized 2° increments. The left-side example shows two enclosures linked for 8° of splay. The ball-lock pin is inserted into the 8° position in the rear block while passing through the "normal" pin hole in the link.

When the "+3" location is used, an additional 3° are added to the "normalized" location. The right side example shows two enclosures linked for 9° of splay. The ball-lock pin is inserted into the 6° position in the rear block while passing through the "+3°" pin hole in the link. The total splay is the 6° indicated on the block, plus the 3° additional from the link position, for a total of 9°. In this manner 1° increments can be attained starting with 3° (0° block location and +3° link arm location).

Fly Grid and Stacking Frame

There are two array frames available for the WideLine system.

The Fly Grid is used for suspending larger arrays. The Fly Grid may be inverted and used for ground stacking.

The Stacking Frame is a compact and easier to handle frame for use as a small array or stacking frame. This frame will easily sit on ground deck stacked bass enclosures or it can be used at those smaller events to suspend clusters from the stage trusses.

Fly Grid

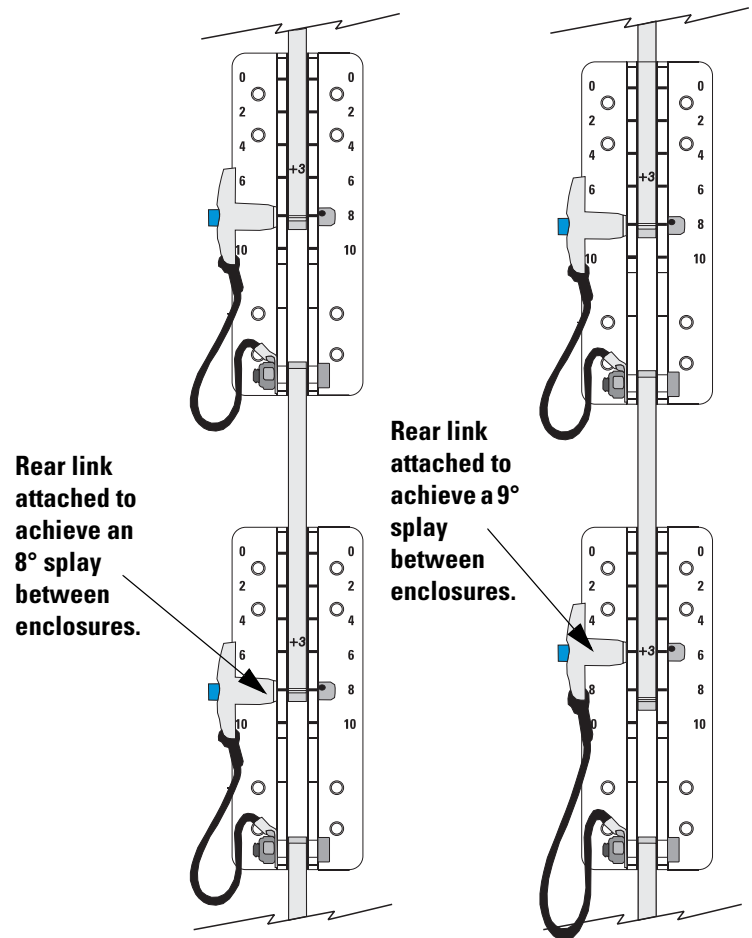


Use only 5/16 inch diameter x 1.25 inch long ball-lock pins on front receiver tubes.

The three pick up rails allow for any number of rigging solutions to fit the most demanding venues. The rails are drilled for industry standard 5/8 inch shackles.

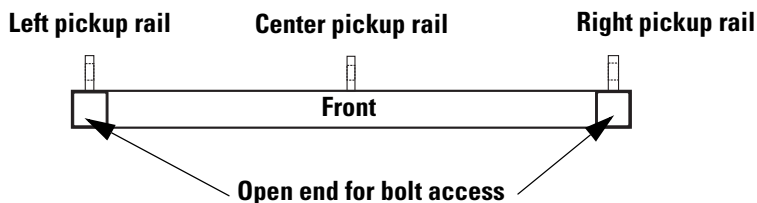
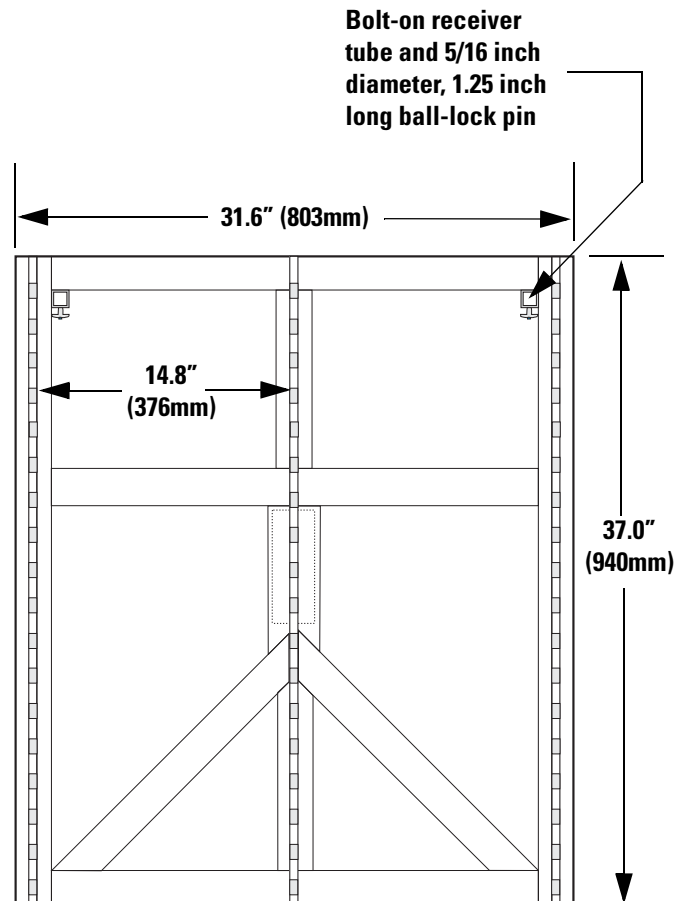


Do not stack more than eight (8) enclosures on the Fly Grid Large Array Frame.



Rear link attached to achieve an 8° splay between enclosures.

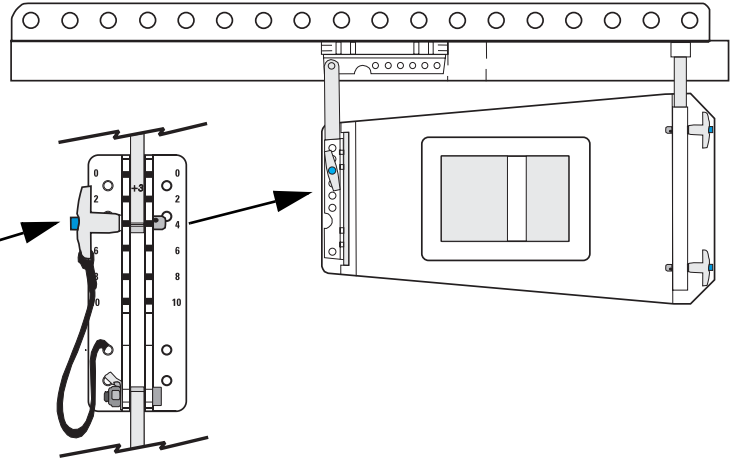
Rear link attached to achieve a 9° splay between enclosures.



Fly Grid

The mounting plate and link bar are located on the bottom side of the frame assembly. Use this link for attaching the rear of the first enclosure. The frame allows for up or down angle options for use with either stacking or suspending. The 4° "normal" locations on the link system will yield a net 0° vertical inclination.

Use 4° link location for 0° vertical inclination



Stacking Frame

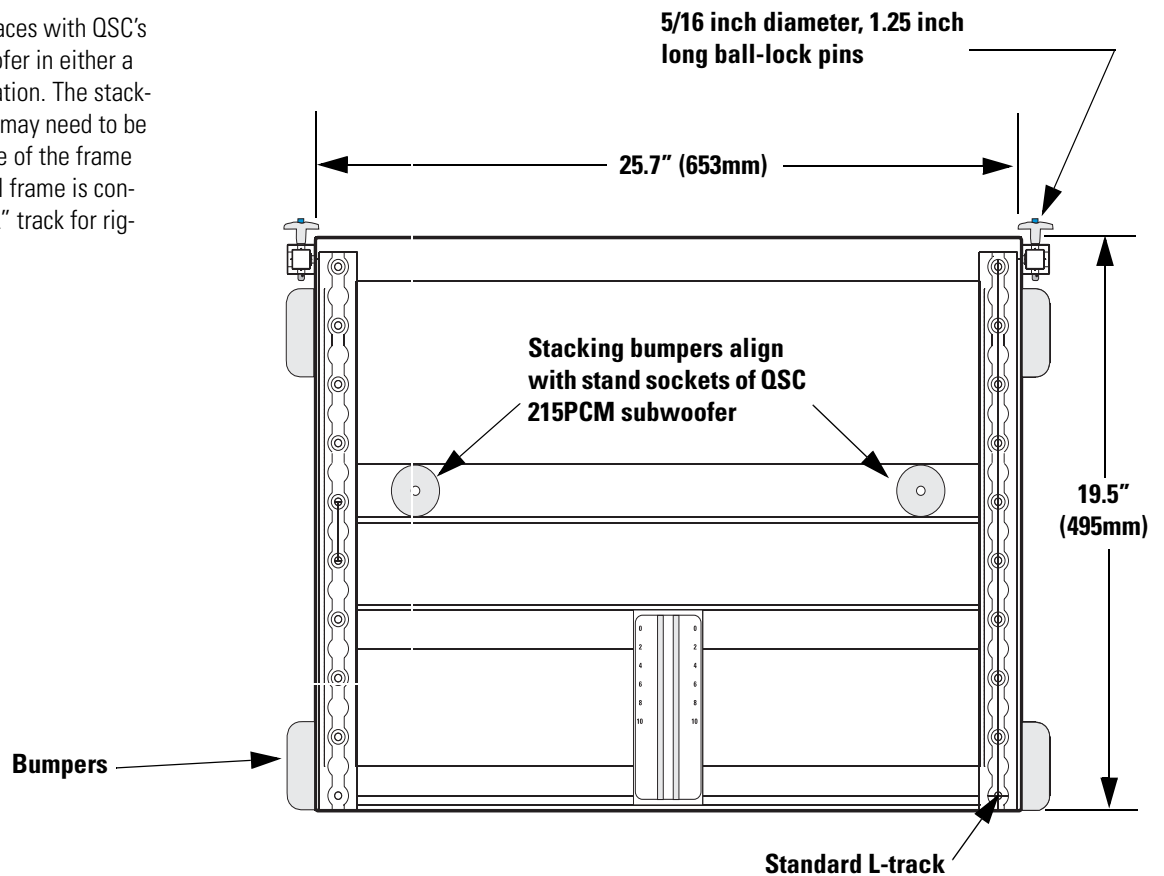


Do not stack more than four (4) enclosures on a Stacking Frame.



Use only 5/16" diameter x 1.25" long ball-lock pins on front receiver tubes.

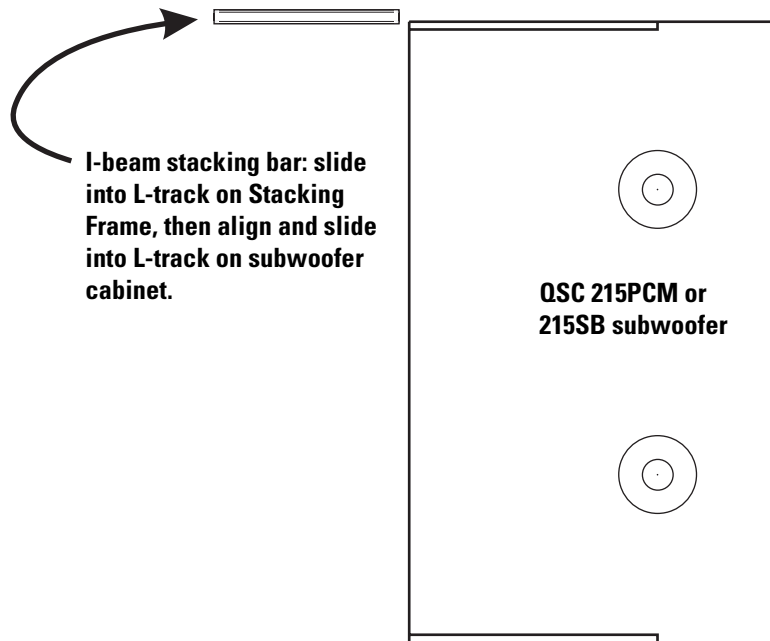
The Stacking Frame interfaces with QSC's 215PCM or 215SB subwoofer in either a stacked or flown configuration. The stacking bumpers on the frame may need to be moved to the opposite side of the frame member for use. The small frame is constructed using standard "L" track for rigging.



Stacking the Stacking Frame

The Stacking Frame comes with two aluminum I-bars used for aligning and securing the frame to QSC's 215SB or 215PCM subwoofer.

To use the I-bars, simply slide each one into the small frame's L-track and secure with a stud fitting. Then, turn the frame over (I-bars on the bottom) and slide the exposed I-bars into the subwoofer's L-track. Secure the I-bar with a stud fitting. Note that the stud fittings used are not required to be load rated as they only retain the I-bars from moving laterally.



I-beam stacking bar: slide into L-track on Stacking Frame, then align and slide into L-track on subwoofer cabinet.

**QSC 215PCM or
215SB subwoofer**



When stacking a Stacking Frame on top of QSC's 215SB or PCM cabinet, use the I-beam inserts (1 in each L-track) to assure proper alignment and to firmly secure the frame to the 215 cabinet. Secure using stud fittings.

Do not stack more than four (4) enclosures on a Stacking Frame.

Care

We suggest wiping down all screws, pins, hardware, and frames with LPS[®] Dry Film Lube or Starrett M1[®] All Purpose Lube before and after outside gigs to help prevent oxidation. This will not only prevent the formation of rust and other oxides, but also provide lubrication, adding to the longevity and ease-of-use of the WideLine product.

System Specifications (subject to change without notice)

Configuration:	Three way, bi amp or tri amp
Frequency Response ¹ :	55 - 18,000 Hz (+/- 3 dB)
Frequency Range:	48 - 20,000 Hz (-10 dB)
Sensitivity:	LF: 98 dB (1W @ 1m) HF: 107.5 dB (1W @ 1m)
Nominal coverage:	Horizontal: 140 degrees Vertical: Dependant on cumulative splay angle
Nominal Impedance:	LF: bi amp mode 8 Ohm, tri amp mode 16 Ohm. HF: 16 Ohm
Transducers:	LF: Two 10 inch (254mm) long excursion, high power, 3 inch (76mm) voice coil, 16 Ohm, 400W each ² HF: 3.0 inch (76mm) diaphragm, 1.4 inch (36mm) exit, 16 Ohm neodymium compression driver on proprietary patent-pending waveguide, 80W ³
Recommended Amplifier Power:	HF: 300W MF: 700W tri amp mode LF: 700W tri amp mode LF/MF: 1400W bi amp mode

Enclosure:

Type:	Bass reflex (ported), trapezoidal
Material:	WL2102: cored composite laminate WL2102-w: birch plywood
Finish:	Black or white texture coat
Grille:	Powder-coated steel
Connectors:	Two Neutrik NL8 wired in parallel
Attachment points:	Self contained rigging configuration. Front receiver tubes contain captive articulated joints (knuckle) and ball-lock pins on lanyards. Rear mounting block has integral mounting link and ball-lock pin on lanyard.
Weight:	WL2102: 70 lb (31.8 kg) WL2102-w: 83 lb (37.7 kg)

Accessories

Array Frames:	Stacking Frame: For suspended or stacking applications on QSC's 215SB or 215 PCM subwoofer. Frame weight 33 lb (15.0 kg). Fly Grid: For suspended or stacking applications. Frame weight 87 lb (39.5 kg).
Software	EASE Focus line array modeling software tool available; visit www.qscaudio.com or contact QSC's Technical Services for DSP files for both QSCControl.net and Signal Manager
Ball-lock Pins	WL2102: Nylon Lanyard 5/16 inch dia. x 0.75 inch long, t-handle: p-n SR-000052-00 (Rear Link and Front Tube Pin) WL2102-w: 7 inch Stainless Steel Lanyard 5/16 inch dia. x 0.75 inch long, t-handle: p-n HW-000106-00 (Rear Link Pin) 5.5 inch Stainless Steel Lanyard 5/16 inch dia. x 0.75 inch long, t-handle: p-n HW-000126-00 (Front Tube Pin) Array Frames: Nylon Lanyard- 5/16 inch dia. x 1.25 inch long, t-handle: p-n SR-000126-00 (Array Frame Pin)

NOTES-

1- with recommended DSP settings

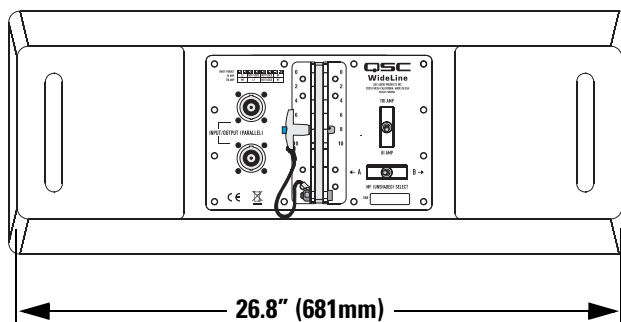
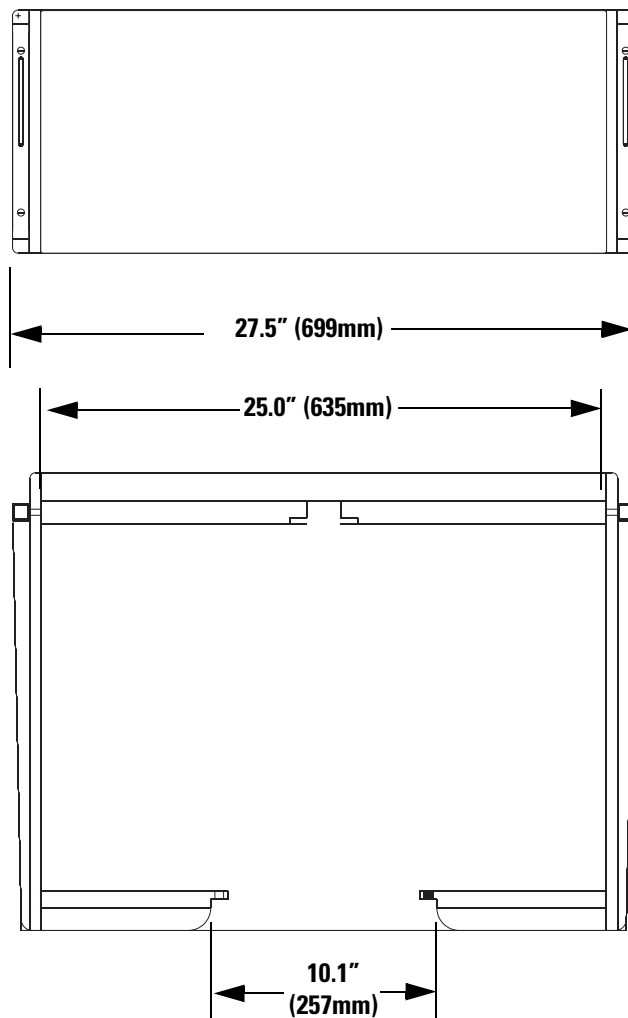
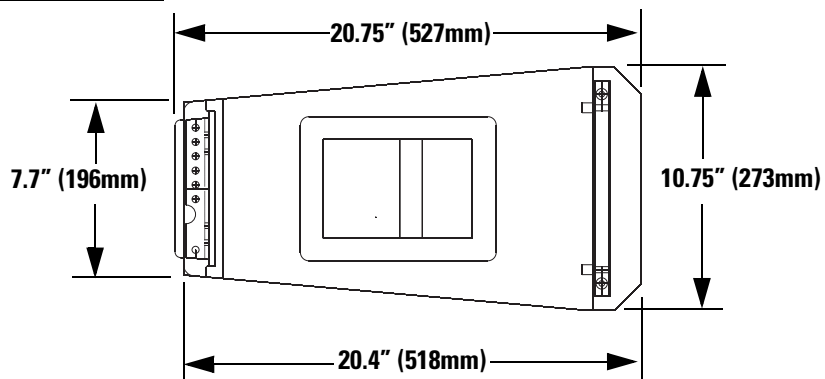
2- 2 hours, AES 1984-2 method, 80 - 800 Hz

3- 2 hours, AES1984-2 method, 1,000 - 10,000 Hz

Dimensions- WL2102 and WL2102-w

NOTE! Composite enclosures have approximately 1° of draft on the enclosure sides; the birch plywood enclosures do not.

Handle orientation may vary between composite and plywood enclosures.



How to Contact QSC Audio Products

Mailing address:

QSC Audio Products, Inc.
1675 MacArthur Boulevard
Costa Mesa, CA 92626-1468 USA

Telephone Numbers:

Main Number	(714) 754-6175
Sales & Marketing	(714) 957-7100 or toll free (USA only) (800) 854-4079
Customer Service	(714) 957-7150 or toll free (USA only) (800) 772-2834

Facsimile Numbers:

Sales & Marketing FAX	(714) 754-6174
Customer Service FAX	(714) 754-6173

World Wide Web:

www.qscaudio.com

E-mail:

info@qscaudio.com
service@qscaudio.com

Warranty Disclaimer (USA only; other countries, see your dealer or distributor)

QSC Audio Products, Inc. is not liable for any damage to amplifiers, loudspeakers, or any other equipment that is caused by negligence or improper installation and/or use of this signal processing product. While QSC has endeavored to develop and produce the most dependable and robust 'network' audio product for your use, due to the myriad of network situations and equipment that may be encountered in its implementation, QSC cannot be held responsible for network conflicts and associated consequences that may result. For this reason, QSC strongly recommends that the network used for implementation of QSCControl products be completely separate from all other networks, data or otherwise. As such, should you elect to integrate QSCControl products with your existing network system, all risks attendant to such integration of QSCControl products with your existing network or network systems are assumed by you. While QSC strives to provide the highest quality technical solutions for networked audio products, in no event will QSC or its suppliers be held liable for any damages, consequential, incidental or otherwise, including any claims for lost profits and/or savings resulting from any attempted integration of QSCControl products with your networking systems. No agent, employee or representative of QSC has any authority to alter or modify in any manner, the disclosures and recommendations set forth herein.

QSC Audio Products 3 Year Limited Warranty

QSC Audio Products, Inc. ("QSC") guarantees its products to be free from defective material and / or workmanship for a period of three (3) years from date of sale, and will replace defective parts and repair malfunctioning products under this warranty when the defect occurs under normal installation and use - provided the unit is returned to our factory or one of our authorized service stations via pre-paid transportation with a copy of proof of purchase (i.e., sales receipt). This warranty provides that the examination of the return product must indicate, in our judgment, a manufacturing defect. This warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or where the date code has been removed or defaced. QSC shall not be liable for incidental and/or consequential damages. This warranty gives you specific legal rights. This limited warranty is freely transferable during the term of the warranty period.

Customer may have additional rights, which vary from state to state.

In the event that this product was manufactured for export and sale outside of the United States or its territories, then this limited warranty shall not apply. Removal of the serial number on this product, or purchase of this product from an unauthorized dealer, will void this limited warranty.

Periodically, this warranty is updated. To obtain the most recent version of QSC's warranty statement, please visit www.qscaudio.com.

Contact us at 800-854-4079 or visit our website at www.qscaudio.com.



QSC Audio Products, Inc. 1675 MacArthur Boulevard Costa Mesa, California 92626 USA
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