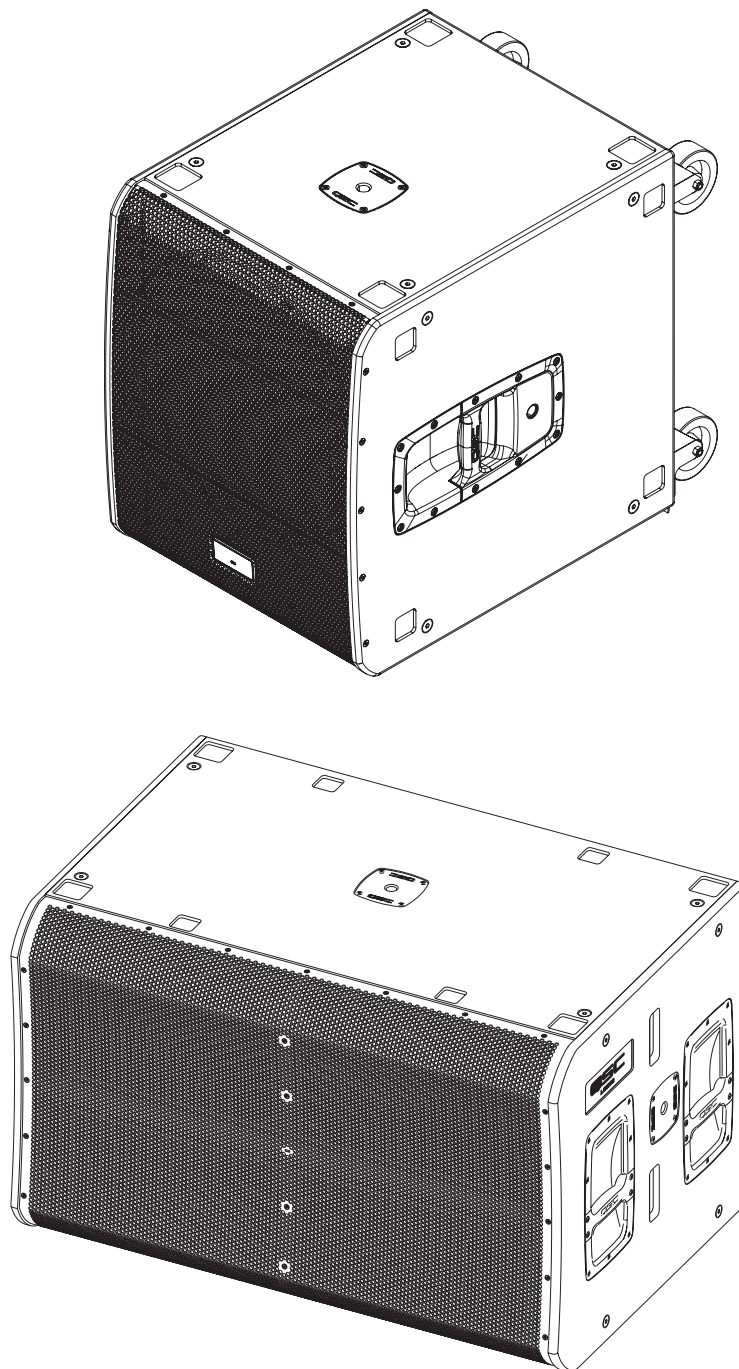


LS118 Active Subwoofer

LS218 Active Subwoofer



TD-001679-01-G



L Class

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EXPLANATION OF SYMBOLS

The term “**WARNING!**” indicates instructions regarding personal safety. If the instructions are not followed, the result may be bodily injury or death.

The term “**CAUTION!**” indicates instructions regarding possible damage to physical equipment. If these instructions are not followed, it may result in damage to the equipment that may not be covered under the warranty.

The term “**IMPORTANT!**” indicates instructions or information that are vital to the successful completion of the procedure.

The term “**NOTE**” is used to indicate additional useful information.



NOTE: The intent of the lightning flash with arrowhead symbol in a triangle is to alert the user to the presence of un-insulated “dangerous” voltage within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.



NOTE: The intent of the exclamation point within an equilateral triangle is to alert the user to the presence of important safety, and operating and maintenance instructions in this manual.



IMPORTANT SAFETY INSTRUCTIONS



WARNING!: TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.



WARNING!: While it is possible for one person to lift an LS Series subwoofer, it is important to use proper lifting techniques. Suggested reading: OSHA Technical Manual on Back Disorders and Injuries. (http://www.osha.gov/dts/osta/otm/otm_vii/otm_vii_1.html#app_vii:1_2).

1. Keep these instructions.
2. Heed all warnings.
3. Follow all instructions.
4. Do not use this apparatus near water.
5. Clean only with a dry cloth.
6. Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for user safety. If the provided plug does not fit into the desired outlet, consult an electrician for replacement of the obsolete outlet.
9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments/accessories specified by the manufacturer.
11. Unplug this apparatus during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled, or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. The appliance coupler, or the AC Mains plug, is the AC mains disconnect device and shall remain readily operable after installation.

14. Adhere to all applicable, local codes.
15. Consult a licensed, professional engineer when any doubt or questions arise regarding a physical equipment installation.
16. Suspension of this product should be done by qualified persons following safe rigging practices. Other limitations may apply.
17. Use only the recommended system components and suspension hardware intended for use with this product as directed by this manual.

FCC Statement

LS118 and LS218 Subwoofer



NOTE: The LS118 and LS218 have been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warranty

For a copy of the QSC Limited Warranty, visit the QSC website at www.qsc.com.



NOTE: Read and follow these instructions carefully. If the subwoofer(s) is/are not suspended properly, it could fall, causing personal injury and damage to the equipment. Please refer to the Flown Deployment chapter of the User Manual for rules on suspension.

Introduction

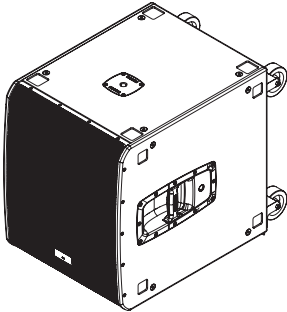
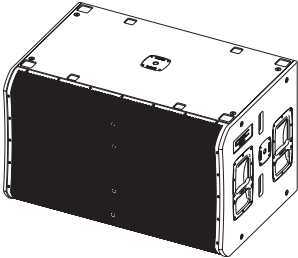
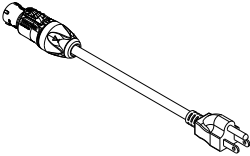
L Class represents the next generation of advanced, intelligent, active loudspeakers/subwoofers for applications ranging from simple, portable, plug-and-play setups, to demanding, networked, high-tech AV productions and fixed installations.

The LS118 and LS218 active subwoofers feature a brilliant combination of leading-edge innovation, refined engineering and unparalleled ease of use in an easy-to-deploy package.

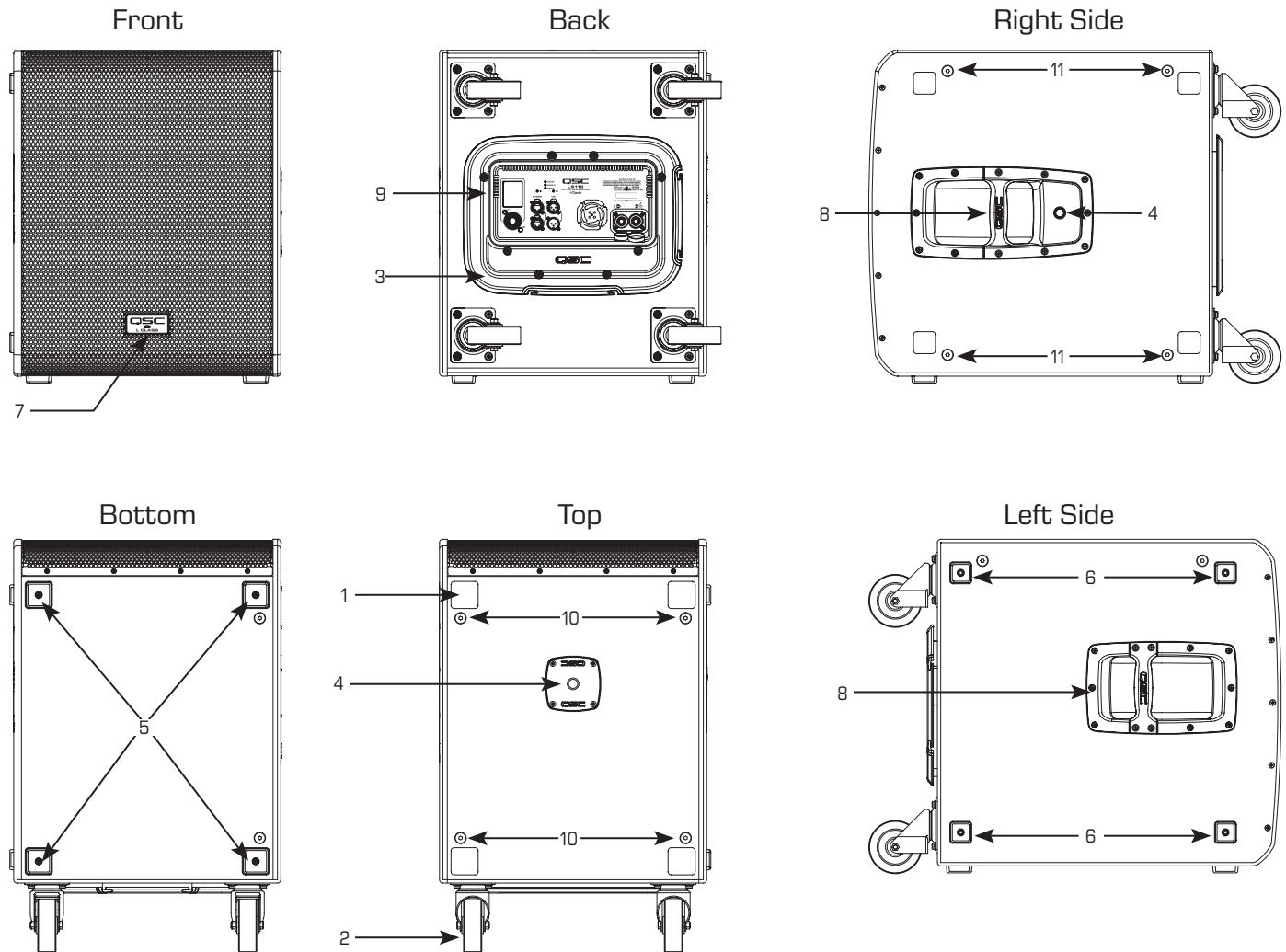
Key Features and Technologies

- Very high output with impressive low frequency performance
- Purpose-designed, 460 mm (18-inch) long excursion direct radiating driver(s)
- Energy-efficient, Class D amplifier module with Power Factor Correction and extremely low AC consumption
- Acoustic Linear Phase (ALP) design provides complementary summation between QSC loudspeakers/subwoofers deployed in the same audio system delivering an ideal and uniform listening experience across the entire venue.
- QSC SysNav™ (System Navigator) App allows the user to easily design, configure, control, monitor and apply signal processing to individual subwoofers, full arrays or groupings of both.
- Network solution includes digital audio-over-IP (Dante®) for interoperability with other audio equipment and seamless control and monitoring integration into the Q-SYS Ecosystem via Q-SYS Inventory Extensions.
- Omni-directional or cardioid radiation modes (cardioid setup requires min. 2 units)
- Selectable DEEP™ mode for extremely low frequency extension
- Rugged painted wood enclosure with scratch-resistant and waterproof coating for lasting durability
- Vertical or horizontal deployments (M20 threaded pole receivers) combined with array frame/ground-stack adapters or loudspeaker poles.
- Complemented by LA108 and LA112 active line array loudspeakers

What’s in the Box

 	(1) LS118 Active Subwoofer unit		(1) AC power cord, with PowerCON® TRUE1 (3 m / 10 ft) connectors
	or		(1) Quick Start Guide
	(1) LS218 Active Subwoofer unit		(1) Safety Sheet TD-001655-00

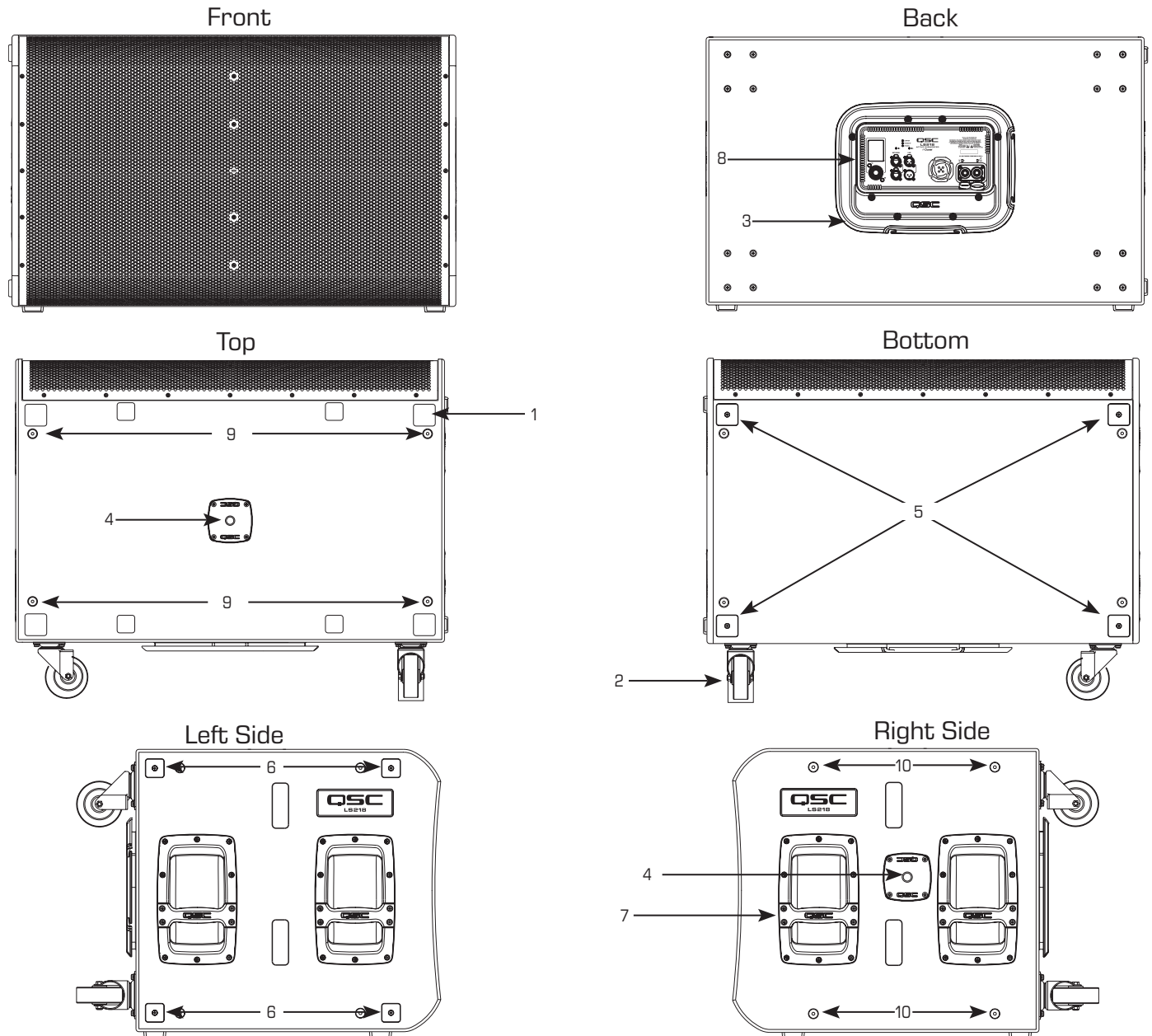
LS118 Features



— Figure 1 —

1. Alignment cups for stacking
2. Four low-noise, heavy-duty casters
3. Amplifier protection/Temporary Weather Shield (TWS) accessory attachment ring
4. Dual M20 threaded socket for 35 mm loudspeaker pole
5. Slip-resistant feet - four on the bottom
6. Slip-resistant feet - four on the side
7. Front power LED
8. Cast aluminum handles
9. Amplifier power module and controls
10. M10 attachment points - four on the top
11. M10 attachment - four on the side

LS218 Features



— Figure 2 —

1. Alignment cups for stacking
2. Caster cart (optional accessory)
3. Amplifier protection/Temporary Weather Shield (TWS) accessory attachment ring
4. Dual M20 threaded socket for 35 mm loudspeaker pole
5. Slip-resistant feet - four on the bottom
6. Slip-resistant feet - four on the side
7. Cast aluminum handles
8. Amplifier power module and controls
9. M10 attachment points - four on the top
10. M10 attachment - four on the side

LS Series Ground Deployment

The LS 118 and LS218 active subwoofers can be used as single low-frequency acoustic sources or in multiples for additional low-frequency reproduction levels.

A simple, practical rule-of-thumb is to use one subwoofer for every two top loudspeakers deployed. The simplest setup consists of placing a single subwoofer between a pair of loudspeakers. For practical reasons, it is often necessary to place the subwoofer on one side, which will usually also produce satisfactory results.

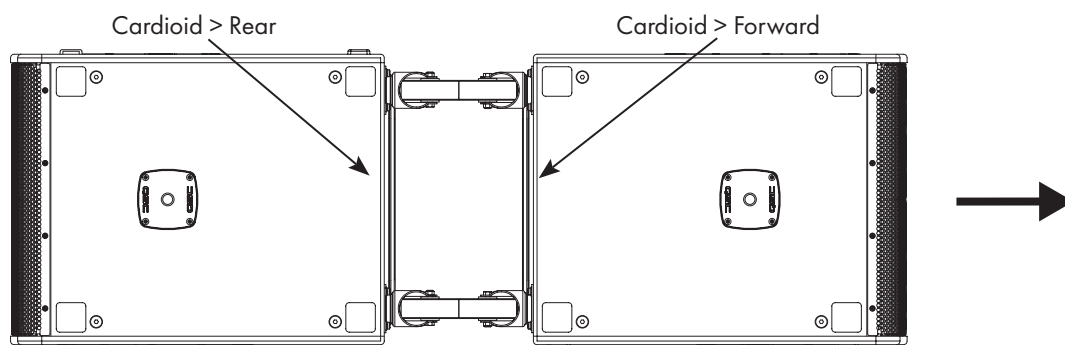
Placing subwoofers to the left and right sides of a stage is often convenient, but it tends to create a concentration of low frequency energy in the middle of the audience area (often named "Power Alley"). To prevent this, try clustering all subwoofers in the left/right middle of the stage, or spread them evenly across the front of the stage.

Cardioid Configurations

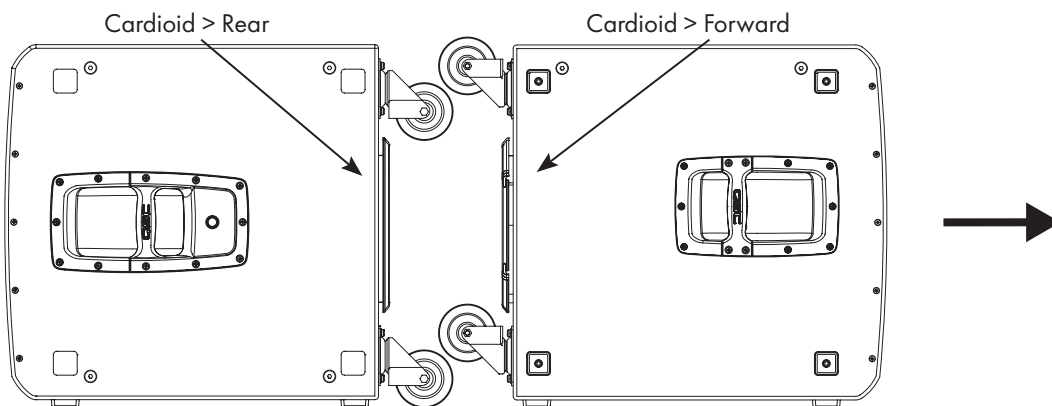
Two or more LS Series active subwoofers can be arranged and configured to produce a cardioid radiation pattern very simply, with no complex calculations or processing settings required. The processing necessary for cardioid operation is already programmed into each LS unit's DSP. On each subwoofer facing forward (toward the audience), select FORWARD on the Cardioid menu. On each subwoofer facing away from the audience, select REAR on the Cardioid menu. Put the same audio signal into both subwoofers and set the same gain on each one.

Back-to-Back

Deploying subwoofers for cardioid performance offers 15-20 dB of sound attenuation to the rear, while still providing up to 2-3 dB more forward sound pressure than a single sub by itself. Figure 3 is a top view of two LS 118 active subwoofers oriented vertically and placed back-to-back. Figure 4 also is a top view of a back-to-back arrangement, but with the subwoofers oriented horizontally. This same deployment can be done with the LS218.



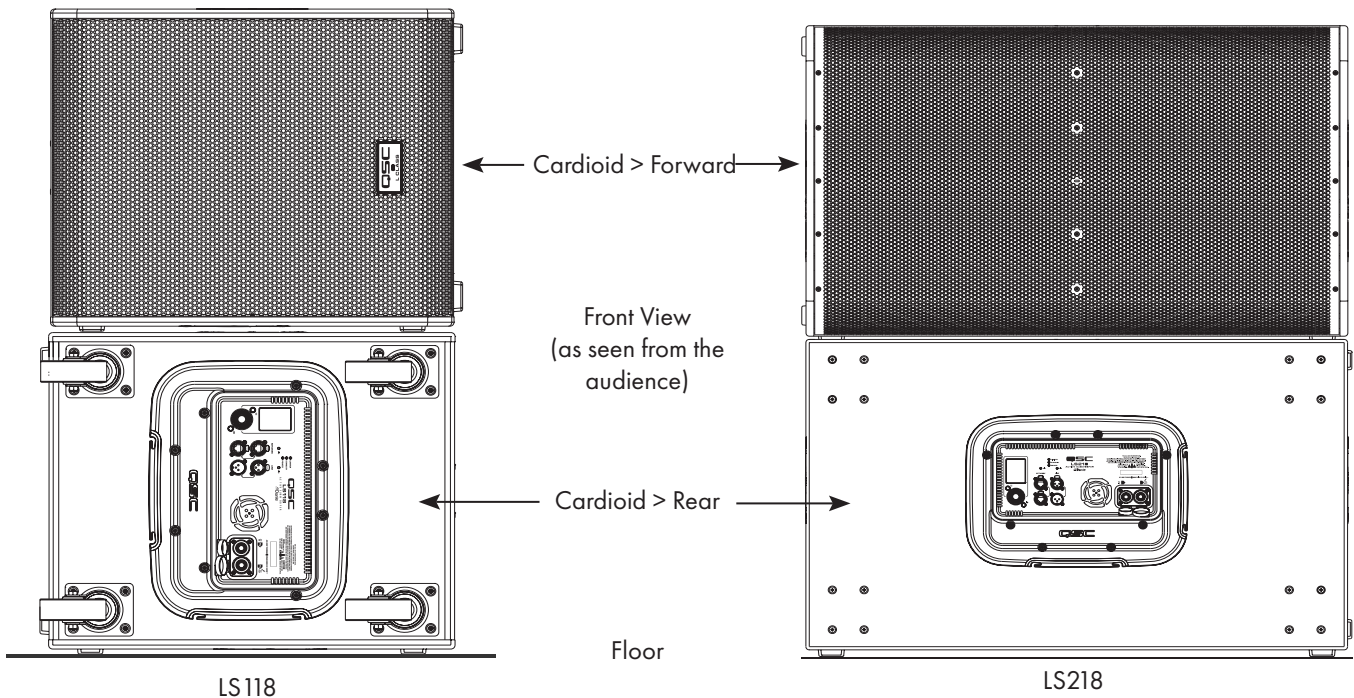
— Figure 3 —



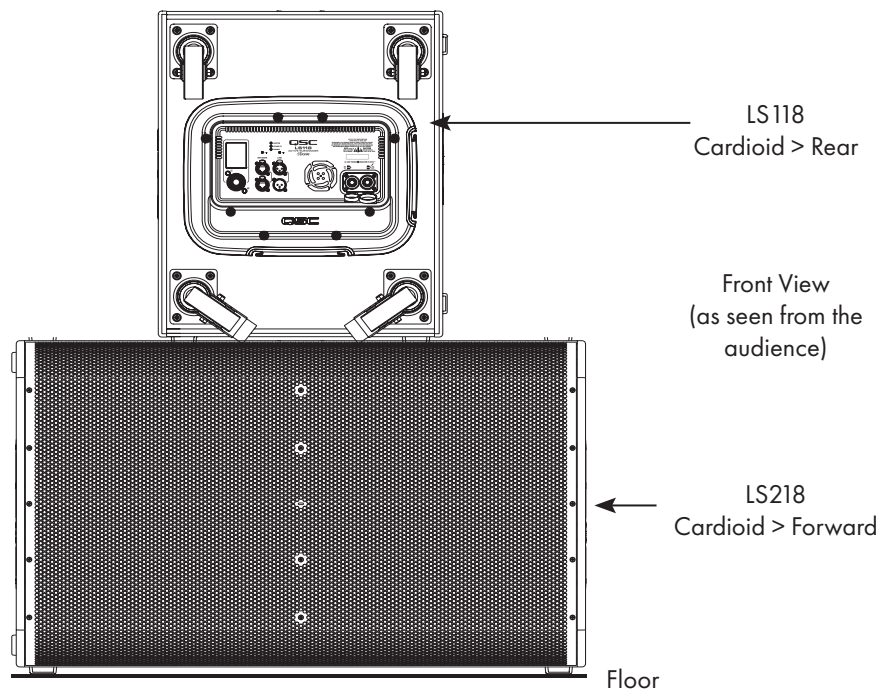
— Figure 4 —

Stacked

Stacking two LS Series active subwoofers is similar to the side-by-side arrangement. Place the rear-facing subwoofer on the bottom.



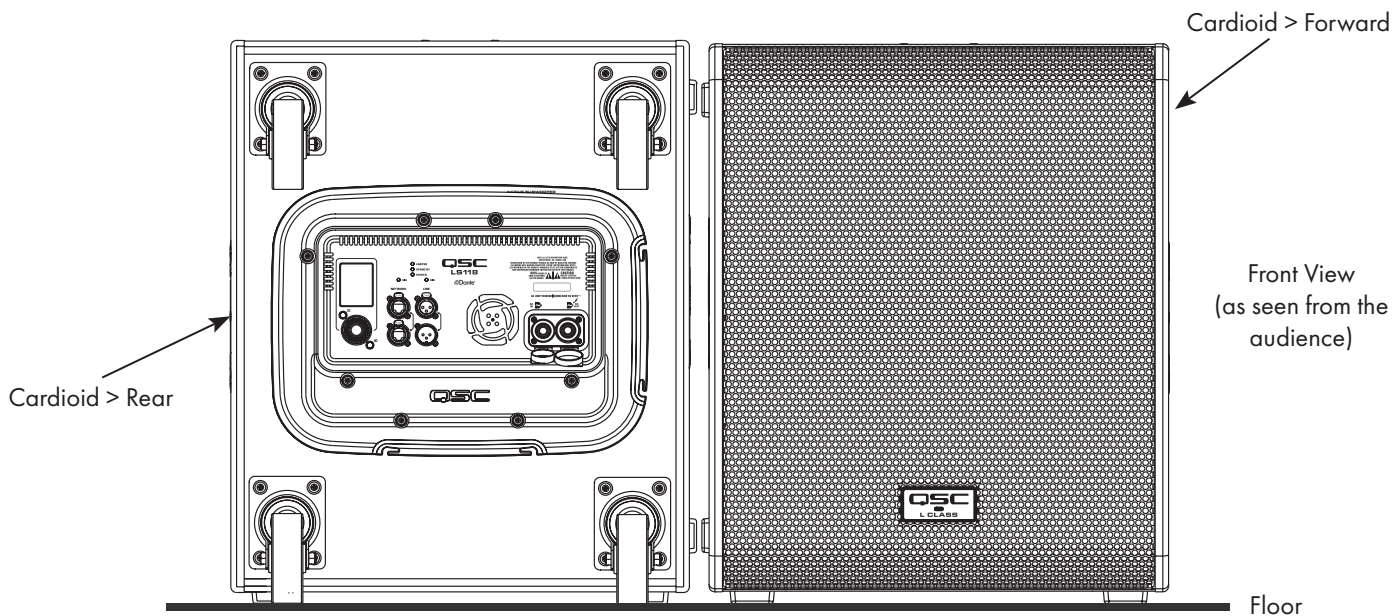
— Figure 5 —



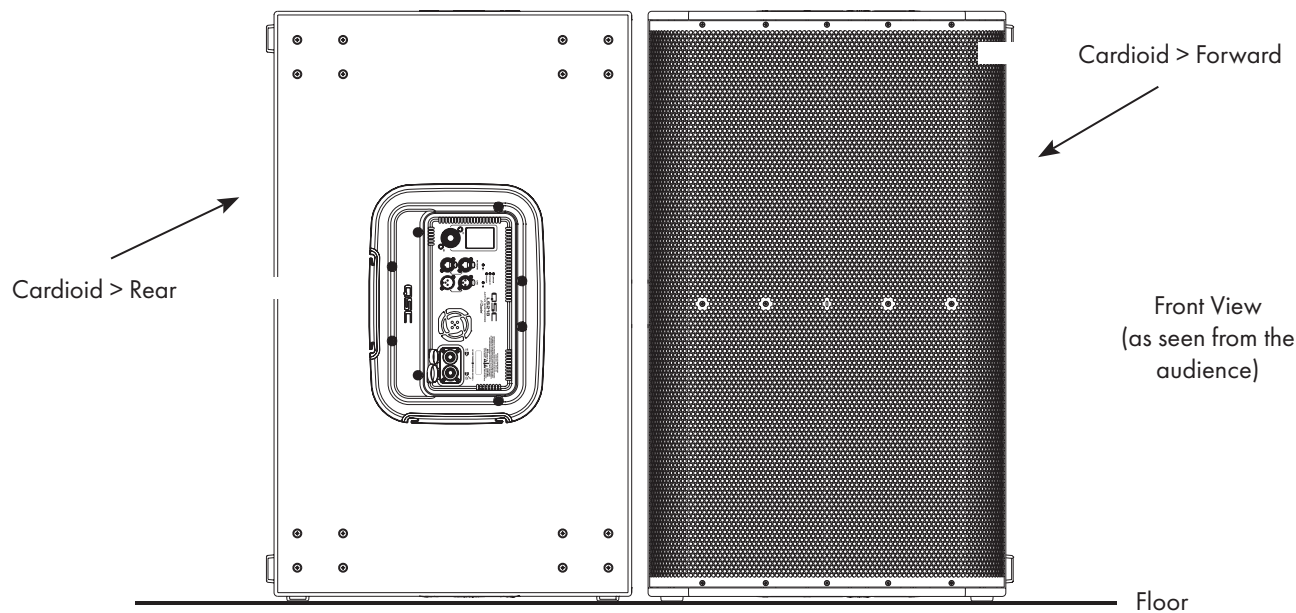
— Figure 6 —

Side-by-Side

Placing the LS Series active subwoofers side-by-side may save space.



LS118
— Figure 7 —



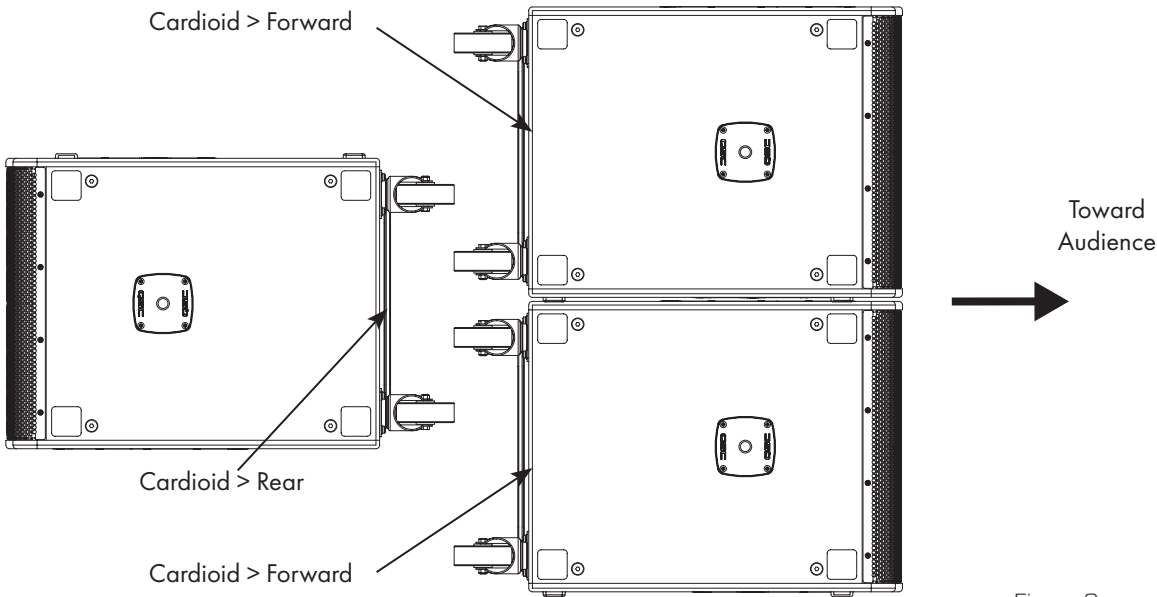
LS218
— Figure 8 —

Three-Box Cardioid Systems

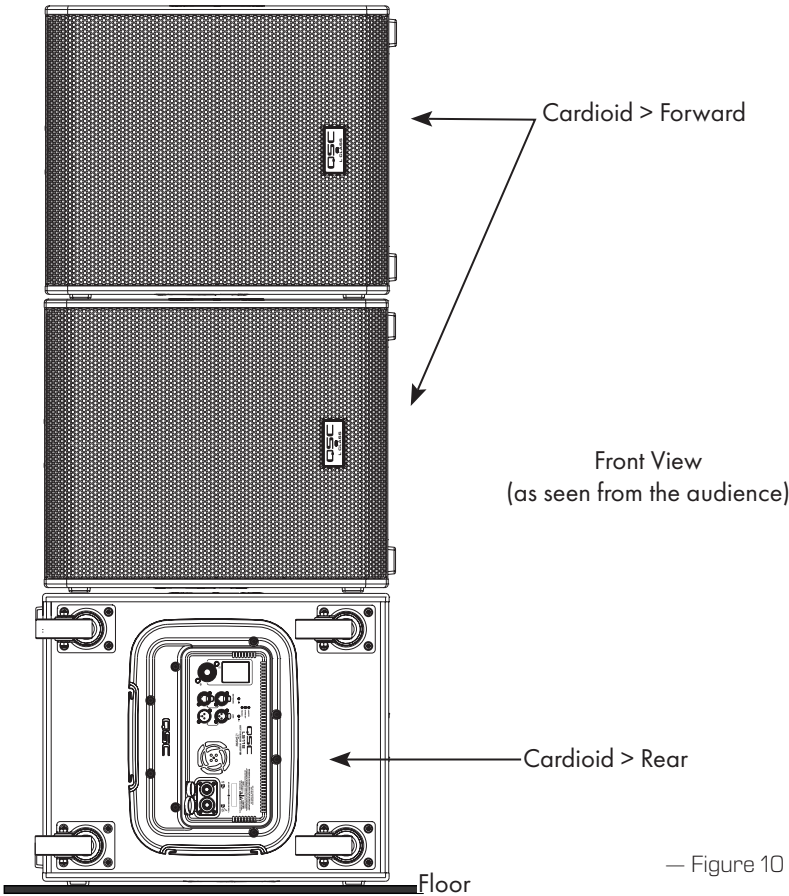
A three-box array, with two forward-facing subwoofers and one rear-facing subwoofer, gives additional acoustic output to the front but with slightly less optimal rear attenuation.

Figure 9 is a top view of a LS118 back-to-back three-box array.

Figure 10 is a front view of a LS118 stacked three-box array. Use the bottom subwoofer as the rear-facing one.

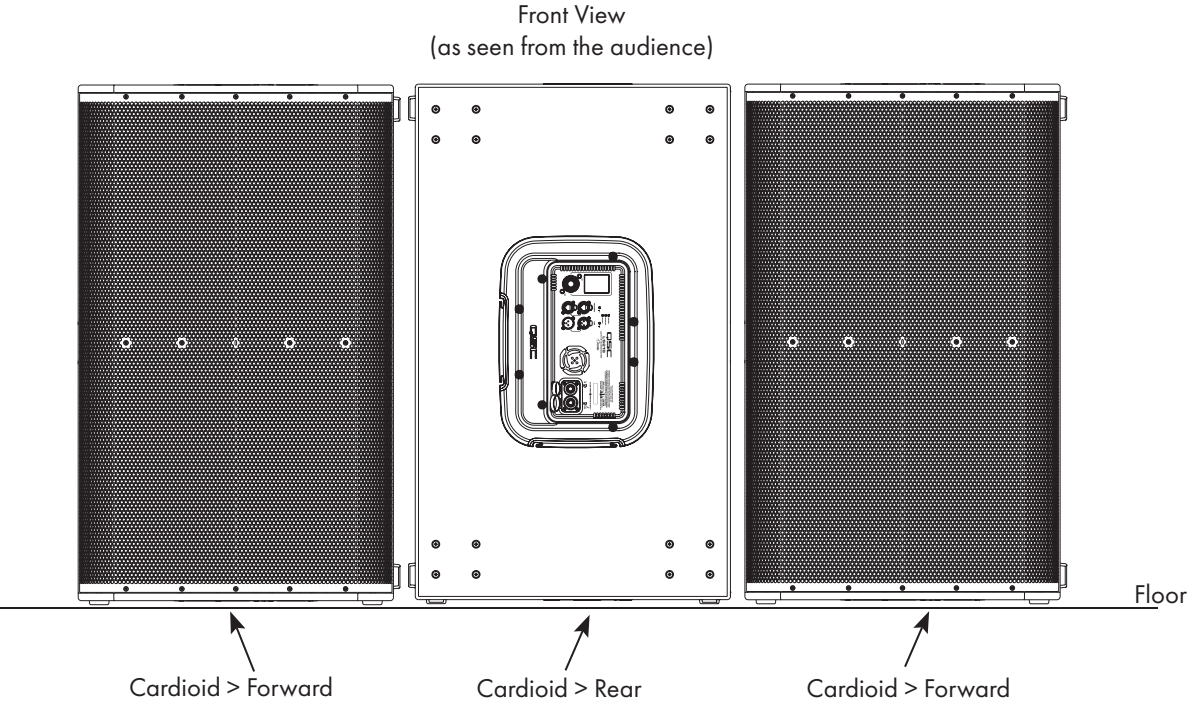


— Figure 9 —



— Figure 10 —

Figure 11 is a front view of 3 LS218 subwoofers side by side in a row with a rear-facing middle unit.



— Figure 11 —

Pole-Mounting Loudspeakers over a Subwoofer

The LS118 active subwoofer is equipped with two M20 threaded pole sockets: one on the top, and one on the side.

Use the tables below to determine which poles are safe to use with LA108/LA112 loudspeakers and an LS118 subwoofer in horizontal or vertical orientations.

LS118 Configuration		LA108	LA108 x2	LA108 x3	LA112	LA112 x2	KLA12	KLA12 x2	KW153	KW152	KW122	K12.2	CP12
Single Subwoofer	Vertical 36-in Pole	✓	✓	✗	✓	✗	✓	✗	✗	✓	✓	✓	✓
	Vertical 26-in Pole	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
	Horizontal 36-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Horizontal 26-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Double Subwoofer	Horizontal 26-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Horizontal 16-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Use the tables below to determine which poles are safe to use with LA108/LA112 loudspeakers and an LS218 subwoofer in horizontal or vertical orientations.

LS218 Pole Configuration		LA108	LA108 x2	LA108 x3	LA112	LA112 x2	KLA12	KLA12 x2	KW153	KW152	KW122	K12.2
Single Subwoofer	Vertical 26-in Pole	✓	✓	✓	✓	✓	✓	✓	✗	✗	✓	✓
	Vertical 16-in Pole	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓
	Horizontal 36-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Horizontal 26-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Double Subwoofer	Horizontal 26-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Horizontal 16-in Pole	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

LS218 Ground Stack Configuration		LA108	LA108 x2	LA108 x3	LA 108 x4	LA112	LA112 x2	LA112 x3
Single	Vertical	✓	✓	✓	-12 deg : ✗ -6 deg : ✓ 0 deg : ✓ +6 deg : ✓	✓	✓	-12 deg : ✗ -6 deg : ✗ 0 deg : ✓ +6 deg : ✓
	Horizontal	✓	✓	✓	-12 deg : ✗ -6 deg : ✓ 0 deg : ✓ +6 deg : ✓	✓	✓	-12 deg : ✗ -6 deg : ✓ 0 deg : ✓ +6 deg : ✓
Double	Horizontal	✓	✓	✗	✗	✓	✓	✗

Flown Deployment

Safety



WARNING! Before placing, installing, rigging, or suspending any loudspeaker/subwoofer 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 or placement. 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 loudspeakers/subwoofers and related equipment are understood and adhered to.

Rigging Safety Regulations

- 2014/35/EU
- EN 62368-1
- 305/2011/EU
- EN 1991-1-1 / EN 1993-1-1 / EN 1993-1-8 / EN 1999-1-1
- ANSI E1.8-2018

Rules for Suspension

- 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.
- Employ the services of a certified, professional rigger for hoisting, positioning, and attaching the equipment to the supporting structure.
- Correct use of all suspension hardware and components is imperative in sound system suspension and deployment.
- Always calculate suspended loads before lifting to make sure suspension components and hardware are used within their respective load limits.
- Consult local codes and regulations to fully understand the requirements for suspended loads in the venue in which the equipment will be suspended.
- Use only dedicated QSC M10 Eyebolt Kit-S for suspending the subwoofer(s). Further details can be found below.
- Be absolutely certain of the integrity of any structural member intended to support suspended loads. Hidden structural members can have hidden structural weakness.
- Never assume anything! Owner or third-party supplied suspension attachment points may not be adequate for suspending the loads.
- Before lifting, always inspect all components (enclosures, suspension brackets, pins, frames, bolts, nuts, slings, shackles, etc.) for cracks, wear, deformation, corrosion, or missing, loose, or damaged parts that could reduce the strength of the assembly. Discard any worn, defective, or suspect parts and replace them with new, appropriately load-rated parts.
- 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. Employ the services of a certified, professional rigger for hoisting, positioning, and rigging the equipment to the supporting structure.

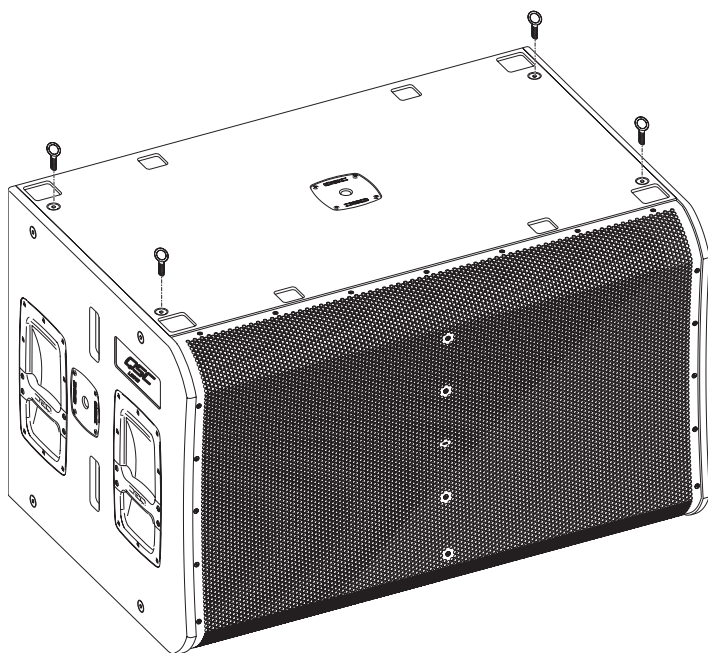
Using the LS Integrated Suspension Points



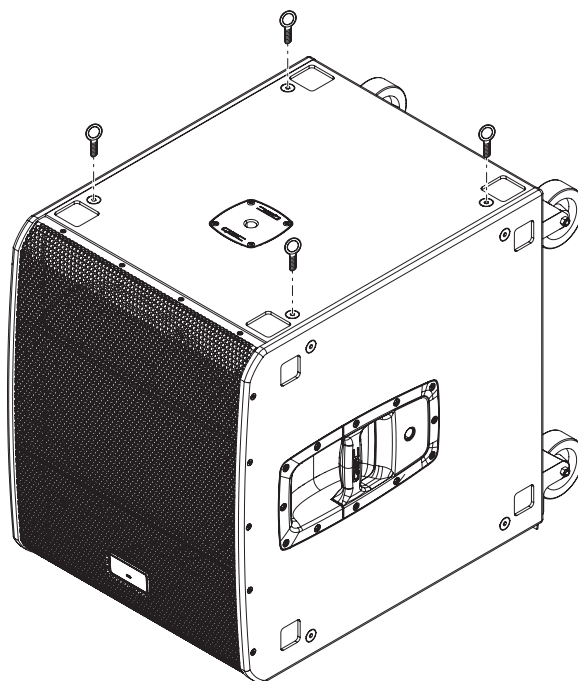
WARNING!: Only a single LS118 or LS218 can be safely suspended utilizing the QSC M10 Eyebolt Kit-S (sold separately). DO NOT attempt to suspend additional loudspeakers or subwoofers underneath the LS Series Subwoofers.

The LS118 and LS218 have M10 bolt points on both the top and the sides of the subwoofer and can be deployed in either direction, based on the space or visual requirements of the installation.

1. Use a 6 mm hex key to remove the four hex screws from the four LS M10 installation points on the top or side of the subwoofer.
2. Thread an eye bolt into each of the threaded inserts.
3. Tighten the eye bolts until their shoulders are snug against the enclosure.
4. Continue to rotate the eye bolts until they reach the desired position. Do not over-tighten, as that may damage the eye bolt thread or the threaded insert.
5. The subwoofer is ready for suspension.

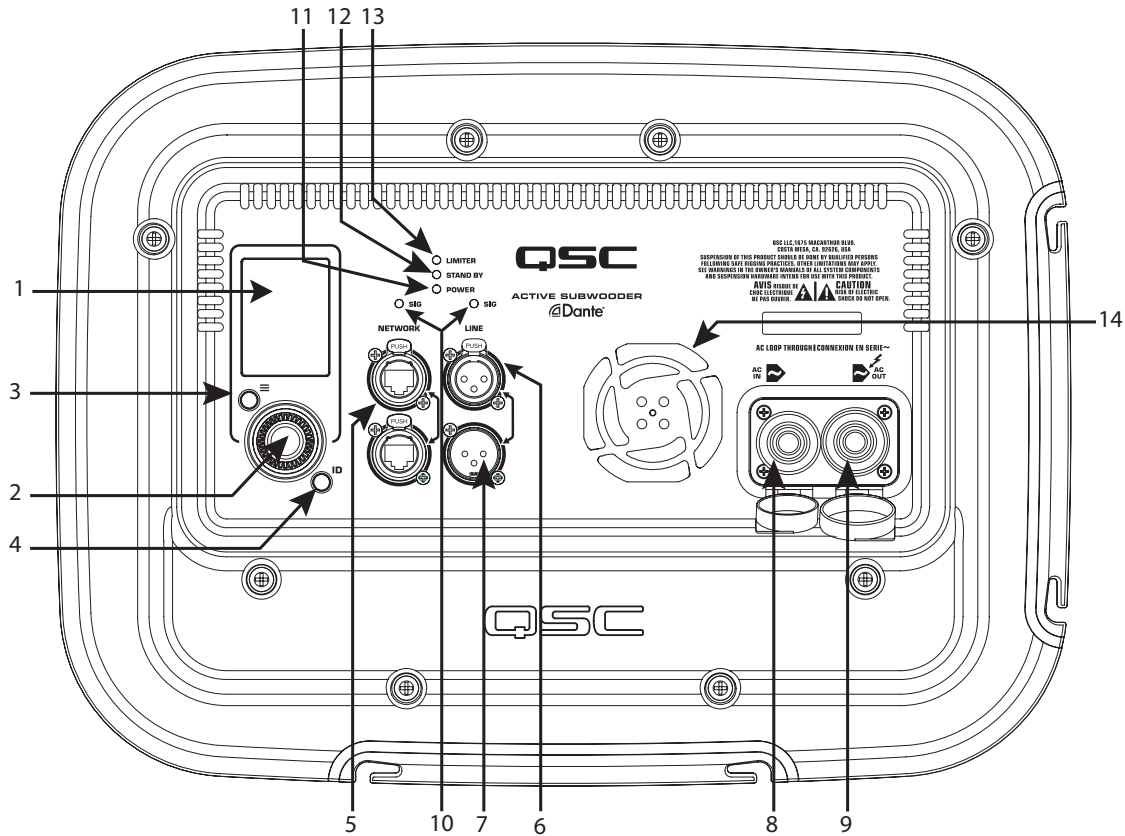


— Figure 13 —



— Figure 12 —

LS118 and LS218 Rear Panel



— Figure 14 —

1. Full color screen displays Menus and Settings
2. Rotary encoder to adjust gain, select values, and press for enter
3. Push to enter the Menu, or return to Home Screen from Menu
4. Push to ID subwoofer in SysNav™ or Q-SYS Ecosystem
5. Dual-switch EtherCON connections to SysNav™ and/or Dante®-enabled system
6. Balanced analog input connection for line level sources
7. Parallel (Through) balanced analog output connection of the balanced input
8. PowerCON TRUE1 locking AC Power inlet
9. PowerCON TRUE1 locking AC Power pass-through
10. Indicates that signal is present on the associated input
11. Indicates that the subwoofer is powered on
12. Indicates Standby Mode
13. Indicates that the subwoofer DSP is limiting
14. Variable speed ventilation fan

System Power

The LS Series power module does not include a power switch. This is done to prevent an array from being suspended and a loudspeakers'/subwoofers' power switch inadvertently bumped or left in the off position. To power a subwoofer on/off, either switch the AC supply at the source or twist the AC POWER-IN connector clockwise or counter-clockwise to power each subwoofer on/off.

For safety reasons, it is important to follow the proper power cable connection/disconnection sequence to power on or off loudspeakers and subwoofers.

Proper power on/off sequencing can help to prevent undesirable sounds from being introduced into the loudspeaker/subwoofer system (pops, clicks, thumps). Always follow the rule that loudspeakers/subwoofers are “last on, first off.”



WARNING!: The LS Series employs a universal power supply capable of operating the system with input AC power voltages ranging from 100 – 240 VAC at 50 – 60 Hz. Make sure to only use the power cable that is appropriate for the location of deployment.

AC Connectors

The LS Series Subwoofer features dual powerCON TRUE1 AC connectors to support daisy-chaining multiple loudspeakers/subwoofers within an array or for ground-stacking deployments.

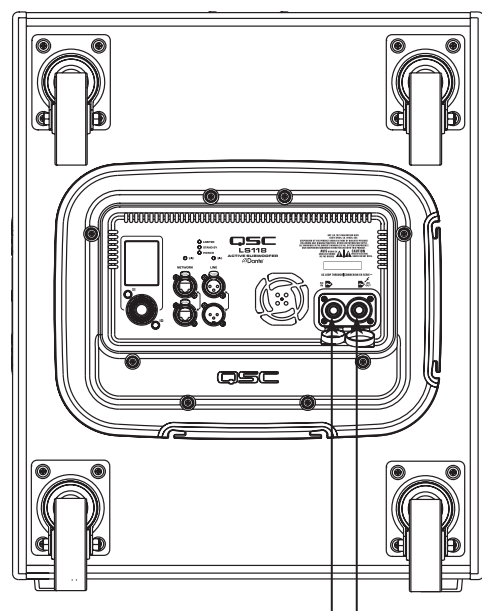
Neutrik powerCON TRUE1 AC connectors have become standard in the AV production industry and are often found on lighting systems and portable LED walls.

PowerCON TRUE1 connector benefits:

- 16 Amp current capacity
- Safe connection/disconnection under load
- POWER-IN and POWER-OUT locking connectors can couple to create extension cables — without the need for a separate barrel connector
- IP65 rating for ingress protection (once coupled)

Connecting to AC Mains

1. Insert the locking POWER-IN cable connector of the supplied power cable into the INLET connector on the rear panel.
2. Twist the cable connector clockwise until it locks in place. Twisting the connector also turns power on/off for that box (and any subsequent daisy-chained boxes).
3. Plug the other end of the power cable into the appropriate AC Mains power source.
4. Array will power on automatically once the AC Mains power has been connected.



PowerCON TRUE1 AC connectors

— Figure 15 —

Daisy Chaining using Power Cable Jumpers

The LS Series subwoofer features loop-through power connection using powerCON TRUE1 connectors. The powerCON TRUE1 cable and connector system is rated for a maximum current draw of 16 amps. In most countries, this is sufficient to power a maximum of three (3) LS Series subwoofers from a single connection to the AC mains supply (see chart below for more details by country voltage).

When not in use, the powerCON INLETS and OUTLETS connectors located on the subwoofers' rear panel should be covered by the weather-resistant flaps.

Neutrik powerCON TRUE1 loop-through cables are not included with LS Series subwoofers but may be purchased separately from most professional audio equipment suppliers or from QSC.

- LS-KIT-J (International Jumper Kit: includes 2x 120 cm PowerCON jumpers and 2x 120 cm EtherCON jumpers, 1.5 mm²/H05VV cables)
- LA-KIT-J-NA (North America Jumper Kit: includes 2x 48-in PowerCON jumpers and 2x 48-in EtherCON jumpers, 12 AWG/SVT cables – NEC compliant)



WARNING!: The amplifier AC mains power is present in the loop-through cables. If the AC mains is connected to one LS Series subwoofer, electrical power is present on all connected loop-through cables.



WARNING!: Do not connect more than four (4) LS Series subwoofers together using the jumper power cables (one AC mains power cord and three jumper cables). When using jumper power cables, make all loop-through connections prior to connecting to the AC mains.

Daisy Chaining

1. Insert the locking POWER-OUT connector of the jumper cable (not included) fully into the OUTLET connector on the rear panel. Twist clockwise until it locks in place.
2. Insert the locking POWER-IN connector into the INLET connector on the rear panel of the next loudspeaker/subwoofer in the chain. Twist clockwise until it locks in place.
3. Repeat until all subwoofers in the array (up to four, using three loop-through jumper cables) are properly connected.

Please follow the table below for safely powering each array:

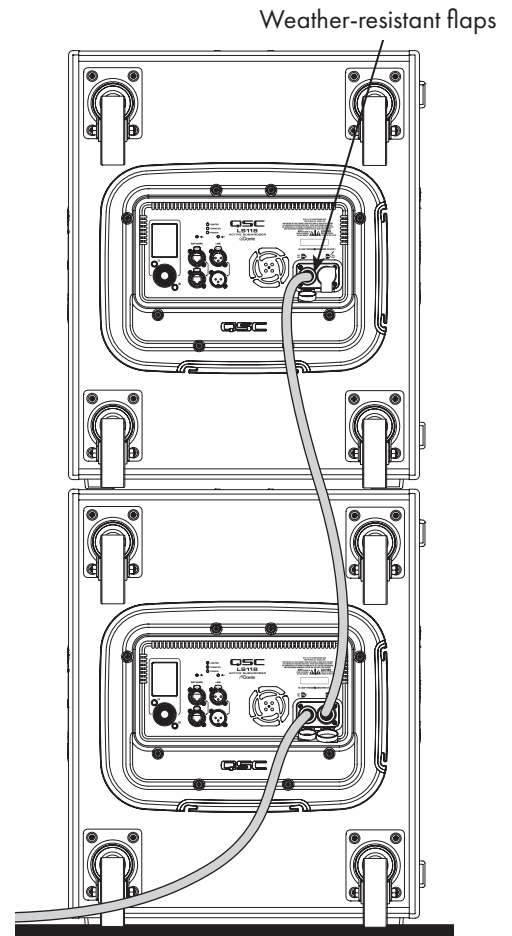
Model	Input Current (normal use)	100V (15A circuit)	220~240V (10A circuit)
LS118 and LS218	100V = 3.7A 120 V = 3.1A 220~240V = 1.8A	Up to 3x subwoofers Total 11A	Up to 4x subwoofers Total 7.2A



WARNING!: Always ensure there is 20% headroom when daisy-chaining AC power to multiple boxes. For example, never load more than 12 Amps on a 120 V/15 A circuit, or 8 Amps on an 230 V/10 A circuit.

Power On Sequence

1. Turn down the output levels on the mixer (or other audio source) to its minimum position.
2. Switch on all source devices (CD players, mixers, instruments).
3. Apply power to the LS Series subwoofer last, twisting the locking POWER-IN connector clockwise. If the LS Series subwoofers are daisy-chained to other boxes, then power only needs to be applied to the first box in the chain.
4. Verify that power has been applied to each loudspeaker/subwoofer. When a unit powers on, the yellow STANDBY indicator LED and the red LIMIT indicator LED on the rear panel illuminates. After a few seconds, the red LIMIT indicator and the yellow STANDBY LEDs dim, and the blue POWER indicator LED illuminates.



— Figure 16 —

Power Off Sequence

1. Turn down the output levels on the mixer (or other audio source) to its minimum position.
2. Disconnect power to the LS Series subwoofer first, twisting the locking POWER-IN connector counter-clockwise. If the LS Series subwoofers are daisy-chained to other boxes, power only needs to be disconnected from the first box in the chain.
3. Verify that power connections have been disconnected on each box. When the blue POWER indicator LED and yellow Standby LED are no longer illuminated, it is safe to proceed.
4. Power off all audio source devices.

Audio Connections



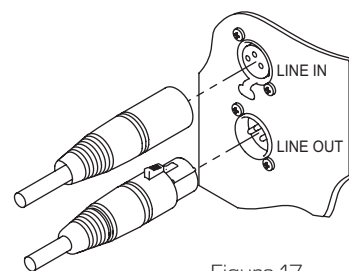
NOTE: While digital audio and analog audio can be physically connected simultaneously, the subwoofer will default to digital audio if a Dante® audio connection is made, rendering the analog audio inputs muted until the Dante® signal is disconnected. The analog connections can be used alongside a line array that is ethernet connected for QSC SysNav™ control, as standalone without SysNav control, or as a backup audio connection in the event of digital audio failure.

Analog Audio

Each subwoofer features a LINE IN (input) XLR and a LINE OUT (output) XLR to support daisy-chaining multiple loudspeakers/subwoofers in an array.

The LINE OUT XLR connector is wired in parallel to the LINE IN XLR connector, making it a direct passthrough. It does not output any Post-DSP signal, nor is the level on the LINE OUT affected by the digital GAIN setting adjusted on the subwoofer.

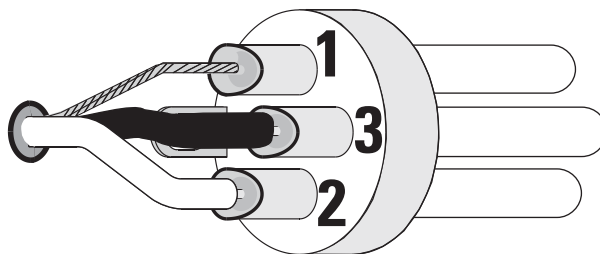
Using the XLR connectors, subwoofers can be safely daisy-chained up to any combination of eight (8) subwoofers or top boxes without any signal loss.



— Figure 17 —



NOTE: It is not recommended to use unbalanced audio connections with LS Series subwoofers. Always use XLR balanced audio connections and wiring as shown in Figure 18.



— Figure 18 —

Daisy Chaining using Balanced XLR Jumper Cables

1. Connect the audio source (such as a mixing console) to the LINE IN XLR connector (6) on the rear panel.
2. If daisy-chaining additional boxes in the array, connect the audio loop-through jumper cable (not supplied) from the LINE OUT XLR connector to the LINE IN XLR connector on the next loudspeaker/subwoofer.
3. Continue this process until all loudspeakers/subwoofers in the array are connected using balanced XLR cables.

Network

The dual network connectors also support daisy-chaining multiple loudspeakers/subwoofers in an array. Unlike the powerCON and XLR connectors which have dedicated input and throughput connectors, the network ports are identical switched ethernet ports, which means either can be used as an input or as a network hop to the next box in the array.

The network ports can accept a rugged etherCON connector or a standard RJ45 connector; however, etherCON type connectors are recommended, rather than conventional RJ45 connectors, as the mechanical robustness and EMC performance is superior.

Each subwoofer includes two IP addresses, one dedicated for Control and one dedicated for Dante audio-over-IP; however, both Control and Dante data traffic are carried over a single CAT5/6 cable into a single RJ45 port.

Daisy Chaining using Network Jumper Cables

There are two common methods for connecting network devices:

- a. **Star Topology:** In this method, each device has its own port on an ethernet switch. This is the most robust method, but it requires a cable home run from each device back to the ethernet switch, which is suitable for permanent installations but challenging for temporary deployments.
- b. **Daisy-Chaining:** This method requires dual switched ports on each device, as found on the L Class loudspeakers and subwoofers. While daisy-chaining is much easier to deploy, it should be noted that each “hop” incurs a latency penalty, measured in micro-seconds that quickly add up. Therefore, a pre-determined latency is applied to each Dante receiving device to account for switch hops, eliminating the risk of dropped packets and resulting audio glitches.

The Dante latency settings are based on worst case latency assumptions and are therefore conservative. The L Class loudspeakers/subwoofers default to 1 ms which will accommodate up to 10 switch hops.

As a reference point, a Dante mixer connected through an ethernet switch to a 6-box daisy-chained array of LS Series subwoofers, is the equivalent of 6 switch hops.

If there are 5 switch hops or fewer, there is the potential to adjust the latency down from 1 ms to 0.5 ms, using the Dante Controller software. Please refer to Audinate for more information on Dante Controllers.

For ethernet daisy-chaining, the optional LS-KIT-J or LS-KIT-J-NA jumper kit will need to be ordered (refer to the Accessories section for more information).

Connecting to a Network

1. Connect the network source (router, switch or computer) to the RJ45 jack on the rear panel using a CAT5/6 cable (not supplied)
2. If using the RJ45 loop-through connections, connect another CAT6 cable to the available RJ45 port on the first loudspeaker/subwoofer, and connect the open-end connector to the RJ45 input on the next loudspeaker/subwoofer.
3. Continue this process until all loudspeakers/subwoofers in the array are connected using RJ45 digital connections.

Control

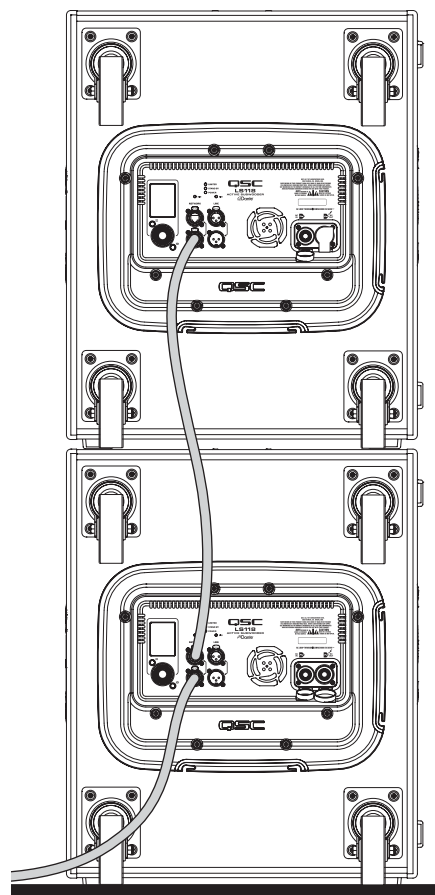
There are two modes of operation using network control:

- a. **Indirect Mode:** This mode duplicates functionality of the Rear User Interface (RUI), allowing Ethernet connection to just one box. Low data communication to the other boxes is managed via wireless transmission (QSC AWARE™).



NOTE: Do NOT use Indirect Mode for Firmware updates.

- b. **Direct mode:** This mode offers greater functionality, but it requires Ethernet connection to every box in the array. When all boxes in the array are discovered on the network, Indirect mode is disabled. To update Firmware, there must be Ethernet connections to each box.



— Figure 19 —

An Array can be controlled and monitored using one of two software applications:

- a. **QSC SysNav™ (System Navigator):** This Windows application is available from QSC.com and allows the user to discover, control, and monitor each loudspeaker/subwoofer within the array. SysNav also manages Firmware updates.
- b. **QSC Q-SYS Designer™:** This Windows application is available from QSC.com and allows the user to discover, control, and monitor each loudspeaker/subwoofer within the array.



NOTE: Q-SYS Designer requires a Q-SYS Core to fully function. More information on Q-SYS Designer is available from the online Helpfile <https://q-syshelp.qsc.com/>

Dante

Each array of loudspeakers/subwoofers can subscribe to a Dante audio-over-IP Transmitter (TX), sent over the network from common audio sources such as a digital mixing console or a QSC Q-SYS Core. Dante subscriptions can be set up using one of two methods:

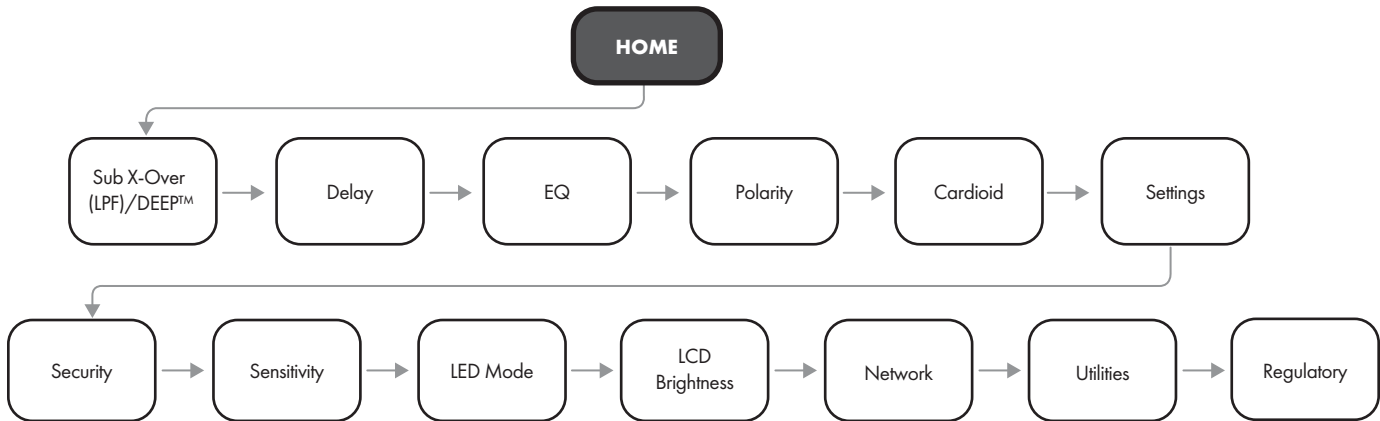
- a. QSC SysNav™ (System Navigator): This Windows application is available from QSC.com and allows the user to view all Dante Transmitters (TX) discovered on the network and subscribe a loudspeaker/subwoofer (or an array) to that transmitter.
- b. Dante Controller: This Windows or macOS application is available from Audinate.com and provides users with a more advanced tool to managing Dante traffic.

LS Series Rear Panel User Interface

Navigation

When first unpacking the LS Series active subwoofer, make sure to download the latest subwoofer firmware as well as the latest version of the QSC SysNav™ (System navigator) App from QSC.com.

Menu Map

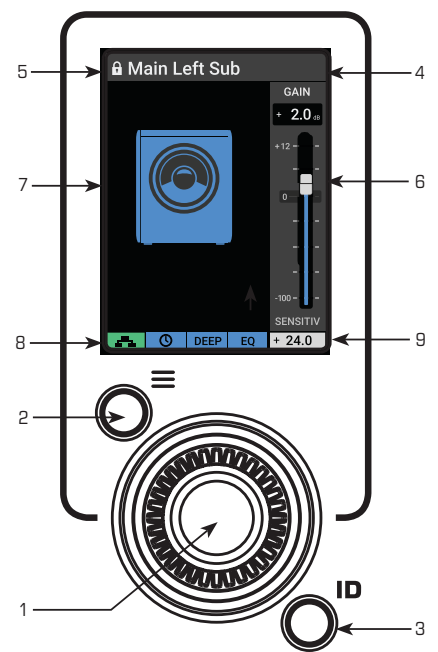


— Figure 20 —

Home Screen

The Home screen is visible after the subwoofer has powered on and booted up completely. If any changes are made via the user interface, users can return to the Home screen from any menu parameter by pressing the Menu button twice or waiting 30 seconds.

1. Rotate to adjust gain on HOME screen, or select values in the MENU. Press to confirm a selected value.
2. Press to access the MENU from the HOME screen, or press while in the MENU to return to the HOME screen.
3. Press ID button to identify subwoofer location when connected to QSC SysNav™ or Q-SYS Ecosystem
4. Information on Subwoofer and Status
5. Security lock status of the subwoofer display
6. Current Gain level for the subwoofer
7. Visual representation of the subwoofer (based on cardioid setting)
8. Network icon displays if the subwoofer is connected to the active network
9. Current Input Sensitivity setting display



— Figure 21 —

Home Screen Status

Based on the state of the subwoofer hardware, the top bar will show the following colors to verify the status at a glance.

Top Bar

Grey – There are no errors detected in the system, and the subwoofer is operating properly.

Red – A hardware failure has been detected. Remove the faulty subwoofer from the system and run the Diagnostic test (available under the Utilities menu). If necessary, bring the faulty subwoofer to a QSC Authorized Service Center.

Network Icon

Green: The subwoofer is connected to a functioning network.

Grey: The subwoofer has not been connected to a functioning network since it's last power cycle.

Red: The subwoofer was previously connected to a functioning network since it's last power cycle, but it has lost connection to that network.

Crossover/Low Pass Filter

Blue: Low Pass Filter is engaged (and current setting is displayed in the icon). 80 Hz is the recommended factory default.

Grey: Low Pass Filter has been defeated.

NOTE: HPF can only be defeated when connected to QSC SysNav.

Delay

Blue: The onboard Architectural Delay is engaged (0-200 ms).

Grey: The delay has been bypassed.

DEEP

Blue: The DEEP™ setting is engaged.

Grey: The DEEP setting has been defeated.

EQ

Blue: The Cardioid setting is active.

Grey: The Cardioid setting has been defeated.

Menu

The menu can be accessed from the Home Screen by pressing the Menu button once, allowing access to the following parameters:

- Low Pass Filter/DEEP: 80 Hz, 100 Hz, 80Hz DEEP, 100 Hz DEEP, SysNav (SysNav adjustment requires the QSC SysNav App)
- Delay: 0 – 200 ms
- EQ: In or Bypassed (User EQ adjustment requires the QSC SysNav App)
- Polarity: Default or Reverse
- Cardioid:
 - Off
 - Front: Subwoofer is forward-facing (towards audience)
 - Rear: Subwoofer is rear-facing (away from audience)
- State: Active, Muted, or Standby (low power consumption mode)



— Figure 22 —



— Figure 23 —

- **Settings:** select to access additional subwoofer settings

Settings

This menu contains important, but less frequently viewed, subwoofer parameters.

Security: A 4-digit code can be entered to lock the subwoofer settings from being adjusted, until the code is re-entered.

NOTE: After a code has been entered and the subwoofer is locked, the user interface will return to the Home Screen, and a lock icon will be displayed in the upper left-hand corner.

Sensitivity: Determines the signal level needed to drive the subwoofer to maximum output.

+24 dBu: For use with high-output, professional mixing consoles (using typically XLR connectors)

+4 dBu: For use with low-output mixing consoles or audio interfaces (using typically 6.35 mm (1/4-in) TRS or RCA connectors)

LED Mode: Front and Rear lit, Front only, Rear only, Blackout (all out)

LCD Brightness: Adjust LCD screen brightness for light or dark environments

Network: Displays network IP address and subnet for QSC SysNav connection, as well as IP address, subnet, and TX Source for the Dante® network connection. DHCP or static IP address can also be selected.

Utilities

Diagnostic Test: An isolated tone is played separately through the LF driver to validate if it is functioning. If no tone is heard, contact a local QSC Service Center for assistance.

Factory Reset: Returns all subwoofer settings to factory default state.

Regulatory

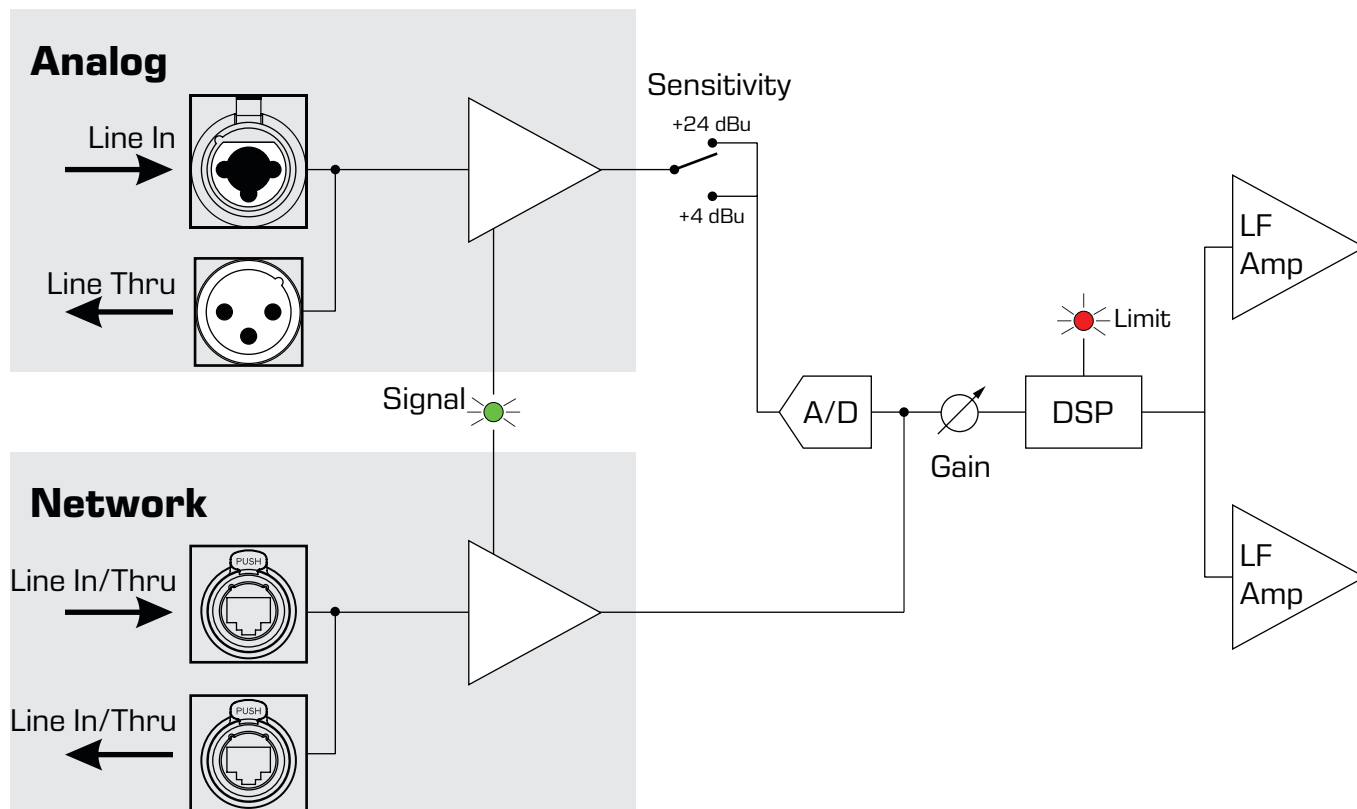
Regulatory statements for product compliance.

Additional Functions

ID Button: When connected to QSC SysNav, the ID button can be pressed to locate the subwoofer in the design. The corresponding subwoofer will flash in the design for 30 seconds or until the ID button is pressed again.

Factory Reset Shortcut: With the subwoofer powered on, press and hold the MENU and ID — Figure 24 — sly for (3) three seconds to initiate a factory reset.

DSP Features



LS118 Accessories (Sold Separately)

- KS118-CVR (Soft Transport Cover made with heavy-duty Nylon/Cordura material, with grille guard)
- TWS-AMP (Universal Temporary Weather Shield protects the complete amplifier panel)
- LS-KIT-J (International Jumper Kit: 2x 1.2 m PowerCON jumpers and 2x 1.2 m EtherCON jumpers, 1.5 mm²/H05VV cables)
- LS-KIT-J-NA (North America Jumper Kit: 2x 48-in PowerCON jumpers and 2x 48-in EtherCON jumpers, 12 AWG/SVT cables – NEC compliant)
- M10 Eyebolt Kit-S (Eyebolt kit for suspending subwoofers: 4x M10×1.5, 35–38 mm eyebolts)

LS218 Accessories (Sold Separately)

- 218-CVR (Single Transport Cover for LS218 on casters, with grille protection)
- 218-CVRX (Transport Cover for Dual 18-in Subwoofer on caster cart, expandable for up to two LS218)
- 218-CART (Caster cart for carrying up to two 218 subwoofers)

Complementary Accessories (Sold Separately)

- Ground-Stack with LA108 loudspeaker: LA108-AF (Array Frame) combined with LA108-KIT-SA (Stack Adapter Kit)
- Ground-Stack with LA112 loudspeaker: LA112-AF (Array Frame) combined with LA112-KIT-SA (Stack Adapter Kit)
- SP-26/SP-36 (66 cm/26-in and 91 cm/36-in M20 Loudspeaker Poles)
- M10 Eyebolt Kit-W (Eyebolt kit for suspending wooden enclosures' loudspeakers: 3x M10×1.5, 35–38 mm eyebolts)

Care and Maintenance

The LS Series does not contain user-serviceable parts. QSC does not recommend using chemicals or solvents to wash loudspeakers/subwoofers. Instead, use a damp towel with water only, and dry immediately after wiping down. Do not allow water to pool on the rigging, hardware, or rear user interface.

If exposed to direct sunlight for extended periods of time, the hardware and paint may become discolored or faded. Cover or shade your LS Series subwoofer from long-term, direct sunlight whenever possible.



Knowledge Base

Find answers to common questions, troubleshooting information, tips, and application notes. Link to support policies and resources, including software and firmware, product documents, and training videos. Create support cases.
support.qscaudio.com

Customer Support

Refer to the Contact Us page on the QSC website for Technical Support and Customer Care, including their phone numbers and hours of operation.
qscaudio.com/contact-us/

Warranty

For a copy of the QSC Limited Warranty, go to:
qscaudio.com/support/warranty-statement/

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