



Manual de Usuario / User's Manual

LX series



Antes de utilizar el equipo, lea la sección "Precauciones de seguridad" de este manual. Conserve este manual para futuras consultas.

Before operating the device, please read the "Safety precautions" section of this manual. Retain this manual for future reference.

LX series

LX passive series

Precauciones de Seguridad Safety Precautions



Caja acústica pasiva / Passive loudspeaker enclosure

El signo de exclamación dentro de un triángulo indica la existencia de importantes instrucciones de operación y mantenimiento en la documentación que acompaña al producto. Conserve y lea todas estas instrucciones. Siga las advertencias.



The exclamation point inside an equilateral triangle is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product. Heed all warnings. Follow all instructions. Keep these instructions.

El doble cuadrado indica equipo de Clase II.



The double square indicates Class II device.

Las especificaciones se encuentran en la etiqueta de la parte posterior del producto.

The specifications can be found on the rear label of the product.

No exponga este equipo a la lluvia o humedad sin el protector de lluvia recomendado. No use este aparato cerca del agua (piscinas y fuentes, por ejemplo). No exponga el equipo a salpicaduras sin el protector de lluvia recomendado, ni coloque sobre él objetos que contengan líquidos, tales como vasos y botellas.

Do not expose this device to rain or moisture without the rain protector supplied. Do not use this apparatus near water (for example, swimming pools and fountains). Do not place any objects containing liquids, such as bottles or glasses, on the top of the unit. Do not splash liquids on the unit without the rain protector supplied.

Este símbolo indica que el presente producto no puede ser tratado como residuo doméstico normal, sino que debe entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.



This symbol on the product indicates that this product should not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

Equipo diseñado para funcionar entre 15°C y 42°C con una humedad relativa máxima del 95%.

Working temperature ranges from 15°C to 42°C with a relative humidity of 95%.

El cableado exterior conectado al equipo requiere de su instalación por una persona instruida o el uso de cables flexibles ya preparados.

The outer wiring connected to the device requires installation by an instructed person or the use of a flexible cable already prepared.

El equipo cuenta con dos conectores de entrada en paralelo para facilitar la conexión de varias cajas en paralelo.

Note that the two Speakon input connectors are wired in parallel to provide easy parallel connection of several enclosures.

No emplace altavoces en proximidad a equipos sensibles a campos magnéticos, tales como monitores de televisión o material magnético de almacenamiento de datos.



Do not place loudspeakers in proximity to devices sensitive to magnetic fields such as television monitors or data storage magnetic material.

El colgado del equipo sólo debe realizarse utilizando los herrajes de colgado recomendados y por personal cualificado. No cuelgue la caja de las asas.

The appliance should be flown only from the rigging points and by qualified personnel. Do not suspend the box from the handles.

No existen partes ajustables por el usuario en el interior de este equipo. Cualquier operación de mantenimiento o reparación debe ser realizada por personal cualificado. Es necesario el servicio técnico cuando el equipo se haya dañado de alguna forma, como que haya caído líquido o algún objeto en el interior del aparato, haya sido expuesto a lluvia o humedad, no funcione correctamente, haya recibido un golpe o su cable de red esté dañado.

No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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.

Limpie con un paño seco. No use limpiadores con disolventes.

Clean only with a dry cloth. Do not use any solvent based cleaners.



Cajas acústicas activas / Self-powered loudspeaker enclosures

El signo de exclamación dentro de un triángulo indica la existencia de importantes instrucciones de operación y mantenimiento en la documentación que acompaña al producto. Conserve y lea todas estas instrucciones. Siga las advertencias. **ATENCIÓN:** Es un producto clase A, por lo que en entornos domésticos puede causar radio-interferencias, en cuyo caso el usuario tendrá que tomar las medidas oportunas. De acuerdo con EN55103-2, usar el equipo sólo en entornos E1, E2, E3 ó E4.



The exclamation point inside an equilateral triangle is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Heed all warnings. Follow all instructions. Keep these instructions.

WARNING: This is a class A product. In a domestic environment this product may cause radio interferences in which case the user may be required to take adequate measures.

Use this product only in E1, E2, E3 or E4 environments according to EN55103-2.

Do not remove mains connector ground, it is dangerous and illegal. Class I device.

No desconecte la tierra en el conector de alimentación pues el peligroso e ilegal. Equipo de Clase I.

El signo del rayo con la punta de flecha, alerta contra la presencia de voltajes peligrosos no aislados. Para reducir el riesgo de choque eléctrico, no retire la cubierta.



The lightning and arrowhead symbol warns about the presence of uninsulated dangerous voltage. To reduce the risk of electric shock, do not remove the cover.

No instale el aparato cerca de ninguna fuente de calor como radiadores, estufas u otros aparatos que produzcan calor. Debe instalarse siempre sin bloquear la libre circulación de aire por las aletas del radiador.

Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.

The circulation of air through the heatsink must not be blocked.

No exponga este equipo a la lluvia o humedad. No use este aparato cerca del agua (piscinas y fuentes, por ejemplo). No exponga el equipo a salpicaduras ni coloque sobre él objetos que contengan líquidos, tales como vasos y botellas. Equipo IP-20.

Do not expose this device to rain or moisture. Do not use this apparatus near water (for example, swimming pools and fountains). Do not place any objects containing liquids, such as bottles or glasses, on the top of the unit. Do not splash liquids on the unit. IP-20 equipment.

Este símbolo indica que el presente producto no puede ser tratado como residuo doméstico normal, sino que debe entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.



This symbol on the product indicates that this product should not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

Equipo diseñado para funcionar entre 15°C y 42°C con una humedad relativa máxima del 95%, con un rango de $\pm 10\%$ de la tensión nominal de alimentación indicada en la etiqueta trasera (según IEC 60065:2001).

Working temperature ranges from 15°C to 42°C with a relative humidity of 95%, with $\pm 10\%$ of the rated main voltage value indicated on the rear label (according to IEC 60065:2001).

El cableado exterior conectado al equipo requiere de su instalación por una persona instruida o el uso de cables flexibles ya preparados.

The outer wiring connected to the device requires installation by an instructed person or the use of a flexible cable already prepared.

Si el aparato es conectado permanentemente, la instalación eléctrica del edificio debe incorporar un interruptor multipolar con separación de contacto de al menos 3mm en cada polo.

If the apparatus is connected permanently, the electrical system of the building must incorporate a multipolar switch with a separation of contact of at least 3mm in each pole.

Desconecte este aparato durante tormentas eléctricas, terremotos o cuando no se vaya a emplear durante largos periodos.

Unplug this apparatus during lightning storms, earthquakes or when unused for long periods of time.

No emplace altavoces en proximidad a equipos sensibles a campos magnéticos, tales como monitores de televisión o material magnético de almacenamiento de datos.



Do not place loudspeakers in proximity to devices sensitive to magnetic fields such as television monitors or data storage magnetic material.

No emplace el producto sobre un carro, base, trípode, soporte o mesa inestables. El dispositivo puede caer, causando serias heridas y dañándose gravemente.

Do not place the product on an unstable cart, stand, tripod, bracket or table. The device may fall, causing serious injury, and serious damage to the device itself.

El colgado del equipo sólo debe realizarse utilizando los herrajes de colgado recomendados y por personal cualificado. No cuelgue la caja de las asas.

The appliance should be flown only from the rigging points and by qualified personnel. Do not suspend the box from the handles.

No existen partes ajustables por el usuario en el interior de este equipo. Cualquier operación de mantenimiento o reparación debe ser realizada por personal cualificado. Es necesario el servicio técnico cuando el equipo se haya dañado de alguna forma, como que haya caído líquido o algún objeto en el interior del aparato, haya sido expuesto a lluvia o humedad, no funcione correctamente, haya recibido un golpe o su cable de red esté dañado.

No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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.

Limpie con un paño seco. No use limpiadores con disolventes.

Clean only with a dry cloth. Do not use any solvent based cleaners.

La reventa del producto sólo es posible incluyendo el manual de usuario. Cualquier cambio producido en el producto tiene que ser documentado por escrito y aprobado por el comprador en el momento de la reventa.

Reselling of the product is only possible if the user manual is available. Any changes made to the product have to be documented in writing and passed on to the buyer in the event of resale.



DECLARACIÓN DE CONFORMIDAD DECLARATION OF CONFORMITY

D.A.S. Audio, S.A.

C/ Islas Baleares, 24 - 46988 - Pol. Fuente del Jarro - Valencia. España (Spain).

Declara que la *serie LX*:

Declares that *LX series*:

Cumple con los objetivos esenciales de las Directivas:

Abide by essential objectives relating Directives:

- Directiva de Baja Tensión (Low Voltage Directive) 2006/95/CE
- Directiva de Compatibilidad Electromagnética (EMC) 2004/108/CE
- Directiva RoHS 2002/95/CE
- Directiva RAEE (WEEE) 2002/96/CE

Y es conforme a las siguientes Normas Armonizadas Europeas:

In accordance with Harmonized European Norms:

- EN 60065:2002 Audio, video and similar electronic apparatus. Safety requirements.
- EN 55103-1:1996 Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 1:Emission.
- EN 55103-2:1996 Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2:Immunity.

GARANTÍA

Todos nuestros productos están garantizados por un periodo de 24 meses desde la fecha de compra.

Las garantías sólo serán válidas si son por un defecto de fabricación y en ningún caso por un uso incorrecto del producto.

Las reparaciones en garantía pueden ser realizadas, exclusivamente, por el fabricante o el servicio de asistencia técnica autorizado.

Otros cargos como portes y seguros, son a cargo del comprador en todos los casos.

Para solicitar reparación en garantía es imprescindible que el producto no haya sido previamente manipulado e incluir una fotocopia de la factura de compra.

WARRANTY

All D.A.S. products are warrantied against any manufacturing defect for a period of 2 years from date of purchase.

The warranty excludes damage from incorrect use of the product.

All warranty repairs must be exclusively undertaken by the factory or any of its authorised service centers.

To claim a warranty repair, do not open or intend to repair the product.

Return the damaged unit, at shippers risk and freight prepaid, to the nearest service center with a copy of the purchase invoice.

CONTENTS

SYSTEM DESCRIPTION	3
LINE DRAWINGS	4
AMPLIFIER DESCRIPTION	5
<i>LX-212A & LX-215A</i>	
<i>LX-218CA</i>	
Preliminary	
ON / OFF	
Overload indicator	
Overheating	
Equalisation	
Low mains voltage	
Current consumption	
Connections	
Rain protector	
Troubleshooting	
RIGGING SYSTEM	11
Warning	
Description and accessories	
Use of the guides	
SPECIFICATIONS	18
CONFIGURATIONS	19
APPENDIX	22
Line connections: unbalanced and balanced	



SYSTEM DESCRIPTION

The *LX series* subwoofers from D.A.S. Audio are systems which use twin *LXN* long excursion loudspeakers incorporating light weight neodymium magnet assemblies and the efficient TAF (Total Air Flow) heat evacuation scheme. The units are ideal for applications requiring high level sub-bass extension in mid to large-scale outdoor/indoor events in arenas, stadiums or theaters.

The *LX* enclosures are constructed of 18 mm birch plywood finished with the durable Iso-Flex black paint. The rectangular shape facilitates stacking and use in cardioid configurations. Both the dual 12" and the dual 15" units have been designed as 6th order band-pass subwoofer systems and incorporate the *12LXN* and *15LXN* loudspeakers respectively. The double 18" unit uses the *18LXN* loudspeaker and presents a bass-reflex configuration.

Four versions are available for each model—two passive versions, and two powered versions indicated by the letter "A" at the end of the model number. "R" versions are equipped with a captive rigging system that is compatible with D.A.S. Aero line array system accessories. As such, the model denominations for the dual 12" systems would be *LX-212*, *LX-212A*, *LX-212R*, *LX-212RA*. The dual 15" models are *LX-215*, *LX-215A*, *LX-215R*, *LX-215RA* and the dual 18" models *LX-218C*, *LX-218CA*, *LX-218CR* and *LX-218CRA*.

To make transporting the systems easier, each of the *LX* systems has an optional dolly platform. The *PL-212S* corresponds to the *LX-212* and its different versions. Accordingly, the *PL-215S* and *PL-218CS* correspond to the *LX-215* and *LX-218C* respectively.

The maximum number of units that can be stacked on any of the dollies is three (3). The *LX-215R/LX-215RA* and *LX-218CR/LX-218CRA* are equipped with a front located dolly panel (*PL-LX215* and the *PL-LX218C*) which is attached by way of the rigging hardware.

Other interesting accessories have been compiled in the Table of Accessories graph below. In the RIGGING SECTION, more detail is provided for the accessories mentioned below.

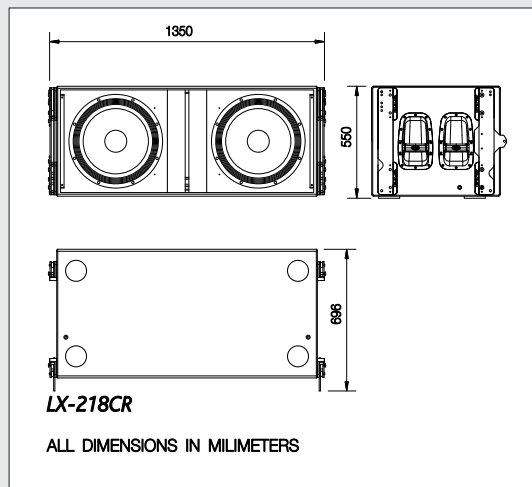
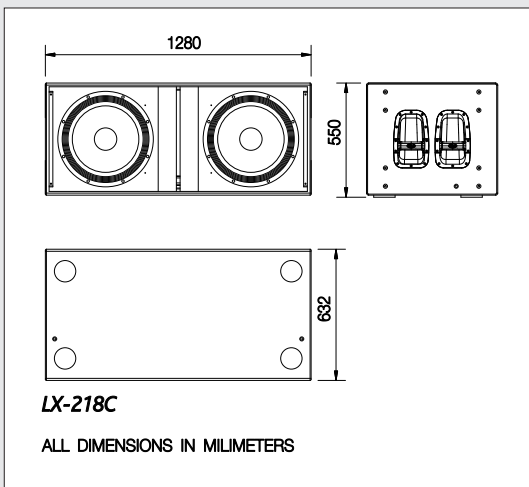
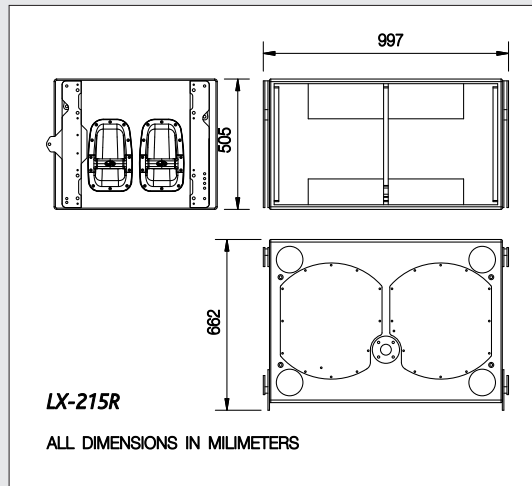
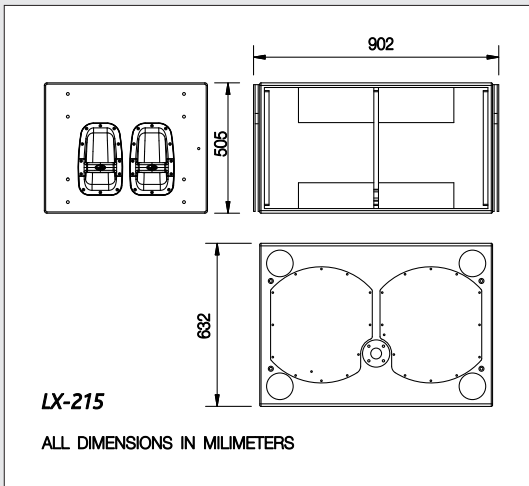
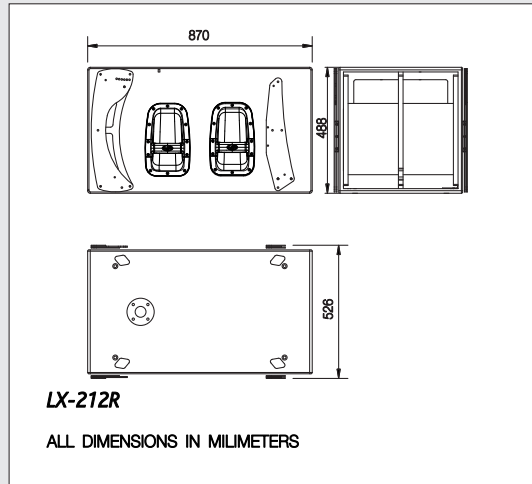
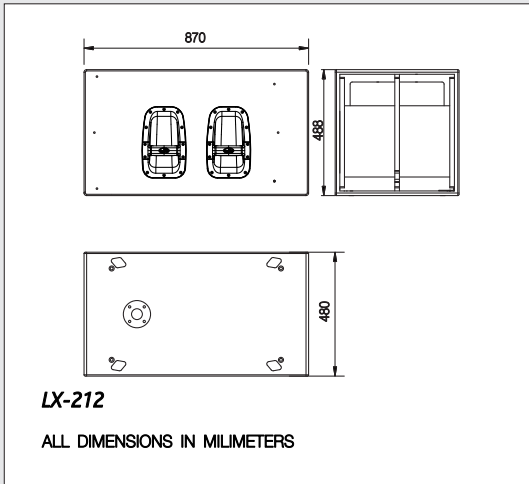
The *LX-212A* and *LX-215A* powered versions incorporate an 1800 W Class D amplifier with switch mode power supply (SMPS) and digital signal processing (DSP). The amplifier has a Cardioid Preset mode switch which offers specific signal treatment for easy set-up of pairs of systems in cardioid subwoofer applications. The system includes two balanced inputs (A-B) with stereo filtered output connections for satellite systems which can be defeated to offer stereo "loop thru" connections. With the filter activated, the cross-over frequency for the satellite systems is 100 Hz. The variable low-pass filter ranges from 100 Hz-160 Hz (satellite outputs are not affected) and can be adjusted by way of the rotary knob. A gain control and polarity reverse feature increase user control over the system.

The *LX-218CA* and *LX-218CRA* powered versions incorporate a 2400 W Class D amplifier with switch mode power supply (SMPS) and digital signal processing (DSP). The amplifier has a Cardioid Preset mode switch which offers specific signal treatment for easy set-up of pairs of systems in cardioid subwoofer applications. The system includes a balanced input and balanced output connection for satellite systems which can be defeated to offer "loop thru" connection.

	LX-212	LX-215	LX-218C
With pole mount socket for TRD-6	YES	YES	NO
Rigging	AX-LX212	AX-LX215	AX-AERO50
Rigging kit	KITR-LX212	KITR-LX215	KITR-LX218C
To transport	PL-212S	KITW-100 PL-215S	KITW-100 PL-218CS
To combine with other systems	PICK-UP AX-LX212 PICK-UP 8212	PICK-UP AX-LX215 AX-COMBO1512	PICK-UP AX-AERO50 AX-COMBO12

Table of Accessories

LINE DRAWINGS



AMPLIFIER DESCRIPTION

LX-212A & LX-215A

1) INPUT :

A and B, XLR-type input signal connectors. These are balanced connectors just like the A and B, SATELLITE OUTPUT, connectors with the following pin assignments:

- 1=GND (ground).
- 2=(+) Non inverted input.
- 3=(-) Inverted input.

2) SATELLITE OUTPUT :

A and B, XLR-type output signal connectors for connecting several units together and sending them all the same input signal or filtered signal (by using THRU/HPF).

3) LIMIT :

Red LED indicates amplifier saturation. Amplifier limiter indicator lights.

4) SIGNAL :

Green LED indicates signal presence.

5) ON :

Green LED indicates that the unit is ON.

6) SUB LEVEL :

Potentiometer for adjusting the unit level.

7) LOW-PASS CROSSOVER :

Button for adjusting the upper cut-off frequency for the subwoofer unit. We recommend a cut-off frequency of 125 Hz.

8) POLARITY :

Switch for inverting the polarity of the unit.

9) HEATSINK.

10) AC INPUT :

PowerCon NAC3FCA connector to turn the unit ON or OFF (inserted, rotated and locked for ON). **Only use this equipment with an appropriate mains cord.**

11) AC OUTPUT :

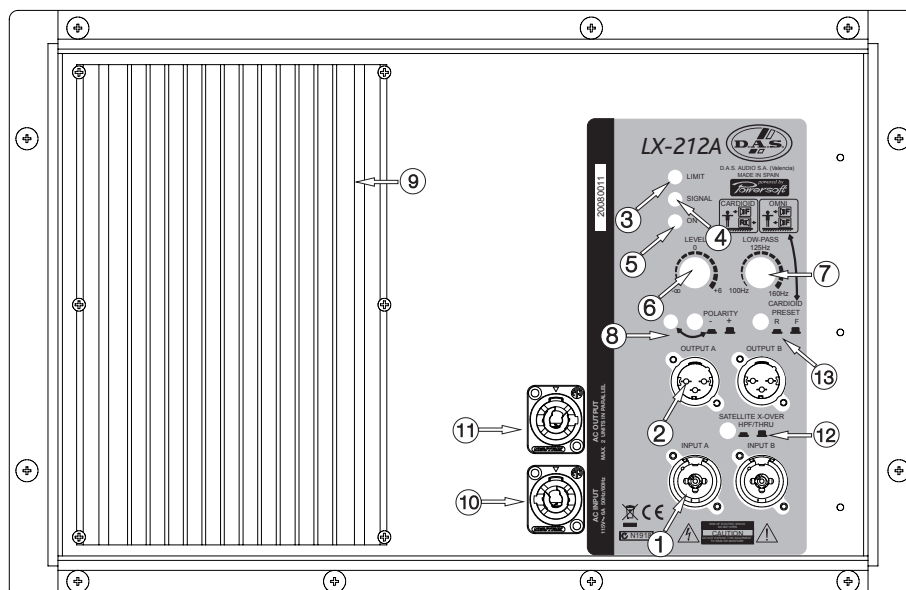
PowerCon NAC3FCBA connector for AC loop thru.

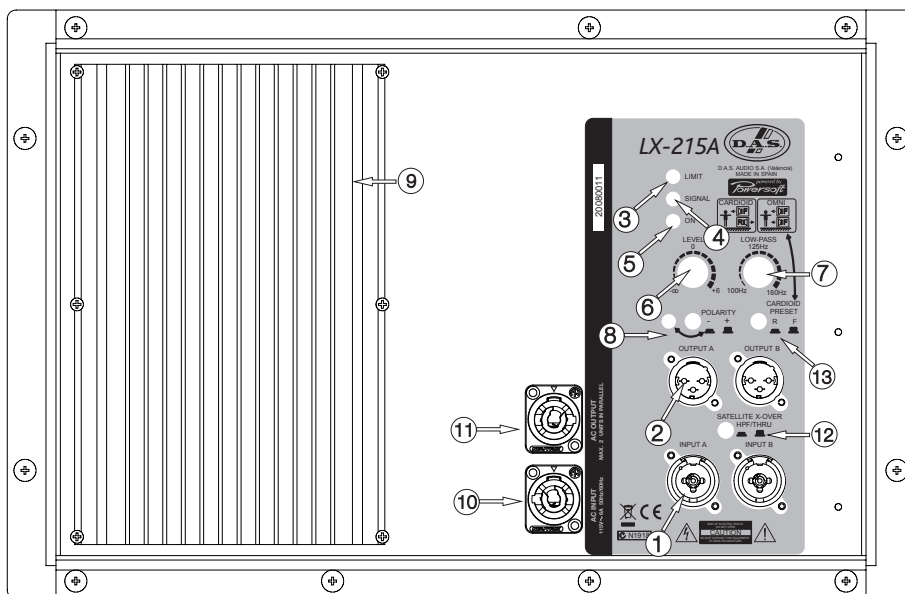
12) THRU/HPF :

'SATELLITE OUTPUT' selector to switch between full range signal or pass filter **with cut-off frequency of 100 Hz.**

13) CARDIOID PRESET :

Button for switching between two types of response: OMNIdirectional or CARDIOID (see pag.7).





LX-218CA

1) INPUT :

A and B, XLR-type input signal connectors. These are balanced connectors just like the A and B, SATELLITE OUTPUT, connectors with the following pin assignments:

- 1=GND (ground).
- 2=(+) Non inverted input.
- 3=(-) Inverted input.

2) SATELLITE OUTPUT :

A and B, XLR-type output signal connectors for connecting several units together and sending them all the same input signal or filtered signal (by using THRU/HPF).

3) LIMIT :

Red LED indicates amplifier saturation. Amplifier limiter indicator lights.

4) SIGNAL :

Green LED indicates signal presence.

5) ON :

Green LED indicates that the unit is ON.

6) CARDIOID PRESET :

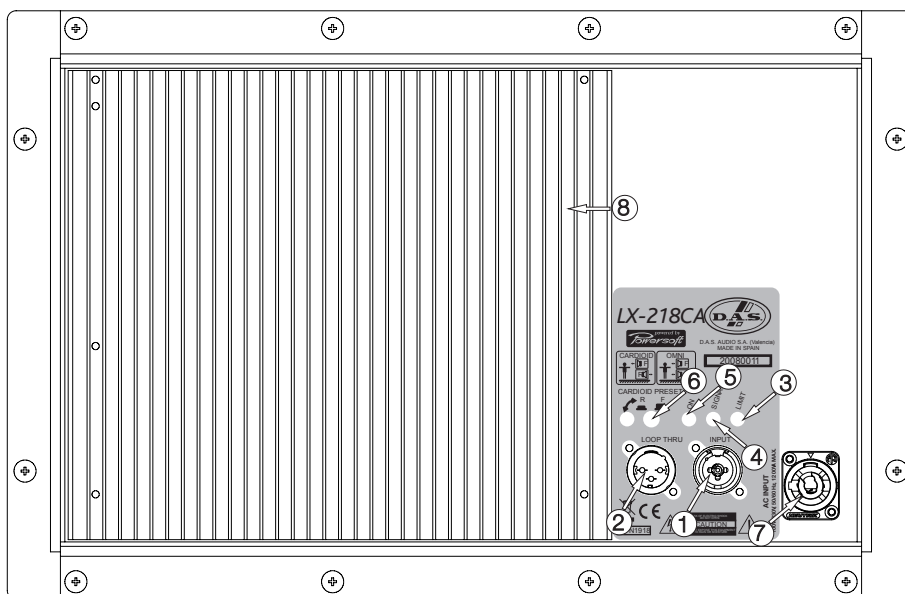
Button for switching between two types of response: OMNIdirectional or CARDIOID (see pag.7).

7) AC INPUT :

PowerCon NAC3FCA connector to turn the unit ON or OFF (inserted, rotated and locked for ON). **Only**

use this equipment with an appropriate mains cord.

8) HEATSINK.



Preliminary

This product should only be used in Residential environments, Commercial and light industrial environments, Urban outdoor environments or Controlled EMC environment and the rural outdoors environment, in accordance with standard EN55103-2 (Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2: Immunity.)

The rain protector provided by DAS is designed to protect the unit from splashes. It also permits an adequate ventilation. Do not cover the unit with other objects and do not obstruct its ventilation.

For consumption reasons, it is important not to connect the equipment to the same line as the lighting systems, thus avoiding interruptions or sudden drops in lighting intensity.

ON/OFF

A sound system should be switched on sequentially. Switch on the self-powered units last in your sound system (switch on the subwoofer before the mid-high system). Switch on the sound sources such as CD players or turntables, then the mixer, then the processors, and finally the self-powered unit. If you have several units, it is recommended that you switch them on sequentially one at a time.

Follow the inverse order when switching off, turning self-powered units off before any other element in the sound system.

Disconnect the device by removing the mains connector from the mains socket. The mains connector and mains socket must always be freely accessible and never covered or blocked in any way. The mains cable can be detached from the device by disconnecting the Neutrik PowerCon connector. Always disconnect the device by removing the mains connector from the mains socket before detaching the mains cable at the Neutrik PowerCon connector.

IMPORTANT: Do not disconnect the unit when it is playing music.

Ensure that the device is disconnected from mains by observing that the ON LED is turned off. Please note that the ON LED can stay on for several seconds after the mains power has been disconnected.

Overload indicator

This device has an indicator (LIMIT LED) that lights when the signal is excessive.

The indicator should not be lit continuously. This distorts the signal (quickly fatiguing your ears) and may damage the speakers. Therefore, it is recommended that you never work with this LED on; at most it should blink only occasionally.

Overheating

This equipment does not overheat during normal conditions of use. Should overheating occur, the unit will protect itself. You should then find out why and if necessary contact an authorised dealer for Technical Assistance.

Normally it is enough just to let the unit cool down after you have corrected the problem so that the system functions properly again.

Equalisation

The unit does not need extreme settings of equalisation to produce quality sound. Avoid high levels of gain on the equalisers. Gain values above +3 dB on a console's EQ are not recommended.

Low mains voltage

If mains voltage falls below the shutdown voltage for the unit, it will stop playing. When acceptable levels are regained, the unit will switch back on automatically.

LX-218CA & LX-218CRA:

The power supply, automatically, allows the system to function using a voltage range: from 80V to 260V.

LX-212A, LX-212RA, LX-215A & LX-215RA:

The power supply allows the system to function using two voltage ranges: from 85V to 130V, for 115V AC version, and from 170V to 260V, for 230V AC version.

Therefore the current consumed by the first range (90 to 128V) is double the second to achieve the same acoustic power level.

Cardioid Preset

This unique feature facilitates the configuration of two or three units to create a cardioid response pattern. This is useful in situations where on-stage bass level projected from the subs needs to be kept to a minimum.

To set-up a cardioid configuration with two stacked units, place the bottom unit facing the audience and the top box facing the stage. Set the controls for level, polarity and cut-off frequency identically on both units. Daisy-chain the signal from one unit to the other (do not activate the satellite output high-pass filter). Activate the Cardioid Preset button on the box facing the stage. This provides the level and phase adjustments necessary to cancel the rear projected sound waves "cleaning" the stage of unwanted bass.

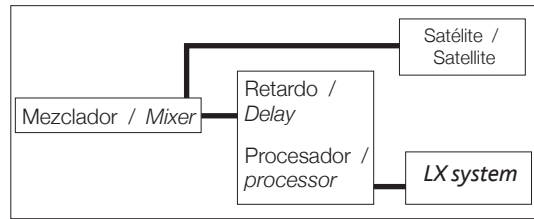
To assemble a cardioid configuration with three stacked units, the procedure is basically the same. Place the lower and top boxes facing the audience, the middle box facing the stage. Daisy-chain the signal, make sure the level, polarity and cut-off frequency are the same on all the boxes and lastly, activate the Cardioid Preset button on the box facing the stage.

Current consumption: AC input =230 Vrms

<i>LX-212A & LX-215A</i>	
Max. power	4.5A
1/3 Power	3A
1/8 Power	1.8A
Idle	0.28A
<i>LX-218CA</i>	
Max. power	4.8A
1/3 Power	3.1A
1/8 Power	1.6A
Idle	0.4A

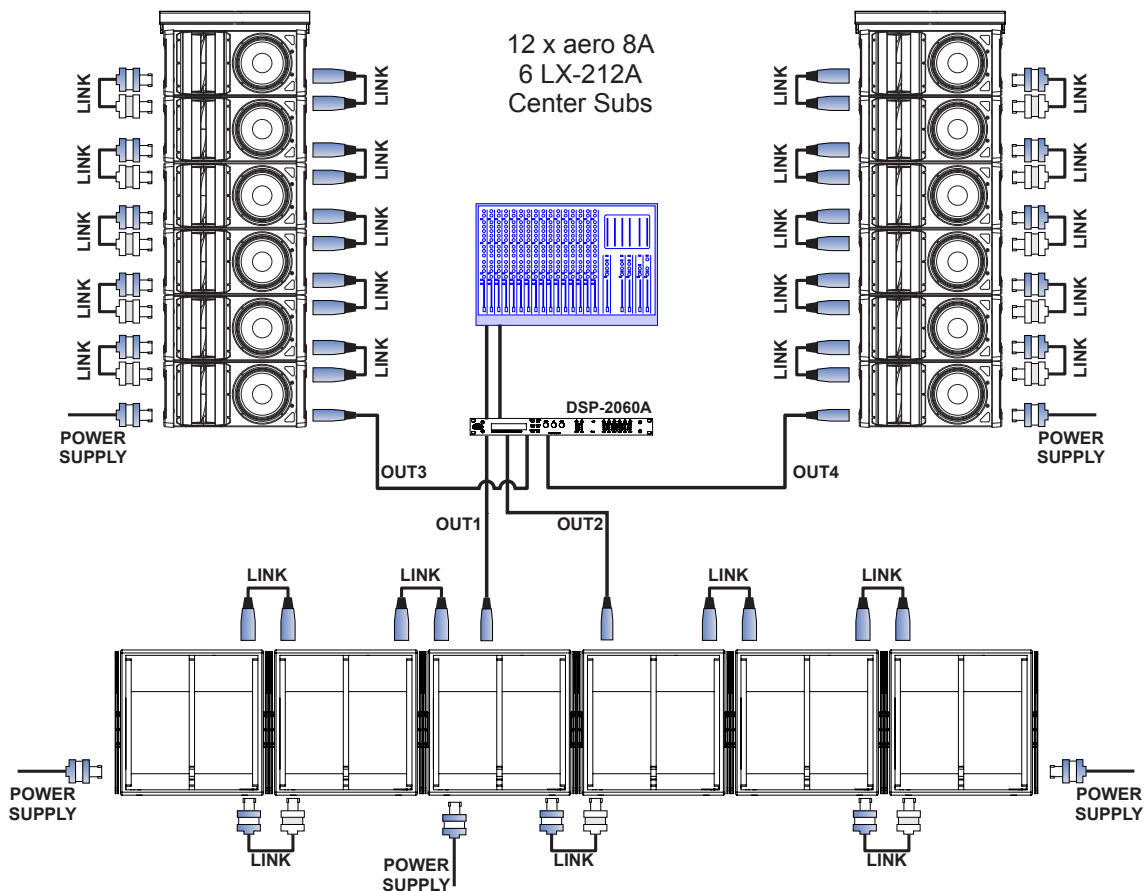
Connections

The most common use will be combined with the satellite system. The use of an **external delay** to control and adjust the phase of the subs is recommended (with a digital processor, for example). The SUBs units are linked with the THRU option setting.



The OUTPUT and LOOP THRU connectors are output XLR type connectors and are useful for daisy chaining the same signal to a number of boxes, connecting them in parallel.

The number of units that can be linked this way depends on the output impedance of the equipment driving the enclosure, such as the mixer or processor. Typically, to avoid signal degradation, the maximum number that can be daisy chained is given by the formula $Z_c > 10Z_s$, where Z_c is the load impedance and Z_s is the output impedance of the equipment driving the enclosure (mixer, console, etc). For instance, a mixing console with 100 ohm output impedance allows daisy chaining 20 boxes, when the input impedance of the cabinets is 20K ohm.



In applications where the SUBs need to be delayed, the *aero 8A* and *LX-212A* use separate signal routing and control at processor.

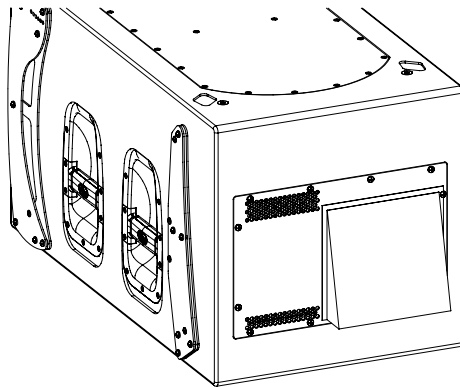
Rain protector

Electronic devices can be damaged when exposed to water or moisture. The *LX* amplifiers must be protected when installed outdoors. A rain protector is supplied with each self powered *LX* unit.

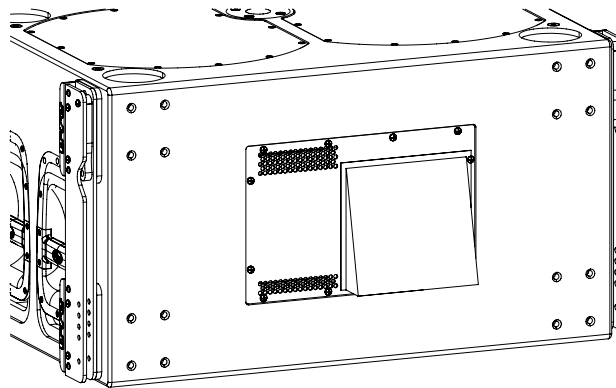
The rain protector is specially designed to withstand soft rain and other meteorological conditions for short periods of time. In the case of heavy rains, storms or permanent outdoor installations the sound system must be protected with additional elements.

The rain protectors supplied with each unit have been manufactured with fireproof materials.

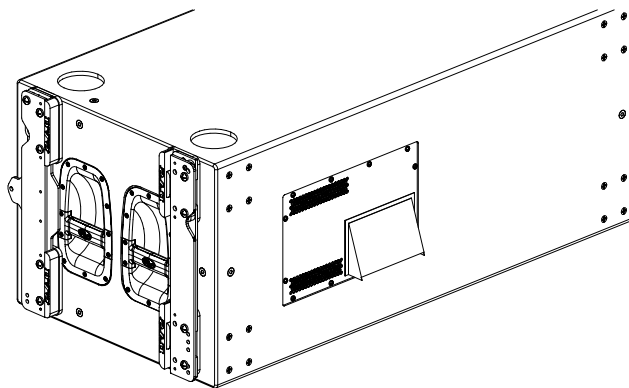
The rain protector features several small holes on the top side to allow convection cooling of the amplifier.



Rain protector for *LX-212A* and *LX-212RA*



Rain protector for *LX-215A* and *LX-215RA*



Rain protector for *LX-218CA* and *LX-218CRA*

Troubleshooting

PROBLEM	CAUSE	SOLUTION
No sound from the unit. The SIGNAL LED does not light up.	<p>1 – The signal source is sending no signal.</p> <p>2 – Defective cable.</p> <p>3 - The amplifier has overheated.</p>	<p>1 – Check that the mixer or sound source is sending signal to the UNIT.</p> <p>2 – Check that the cable from the sound source to the UNIT is connected correctly. Replace the cable if defective.</p> <p>3 - Allow the unit to cool down for some minutes and it will function again. Check the main output level of the mixer or channel gains since the unit will have been functioning with excessive levels.</p>
Full power cannot be obtained. The LIMIT LED never lights up.	The signal source does not have a hot enough output.	If using a mixer, use the balanced output if available. Use a professional mixer with a hotter output.
Sound is distorted. The LIMIT LED is not on, or only lights up occasionally.	The mixer or signal source is distorting.	Turn mixer channel gains down. Check that none of your signal sources are distorting.
Sound is distorted and very loud and LIMIT LED lights up.	The system is overloaded and has reached maximum power.	Turn down the mixer's output.
Hum or buzz when a mixer is connected to the unit.	<p>1.- The console probably has un-balanced outputs. You may be using an incorrect un-balanced to balanced cable.</p> <p>2.- The mixer and the powered speaker are not plugged into the same mains outlet.</p> <p>3.- The audio signal cable is too long or too close to an AC cable</p>	<p>1.- Read the appendix of this manual to make a correct un-balanced to balanced cable.</p> <p>2.- Connect the mixer and the unit to the same mains outlet.</p> <p>3.- Use a cable that is as short as possible and/or move the audio signal cable away from mains cables.</p>
Hum or buzz when using lighting controls in the same building.	<p>1.- The audio signal cable is too long or too close to the lighting cable.</p> <p>2.- On a sound system with three-phase AC, the lighting equipment and the UNIT are connected to the same phase.</p>	<p>1.- Move the audio signal cable away from lighting cables. Try to find out at what point the noise is leaking into the system.</p> <p>2.- Connect the sound system to a different phase than the lights. You may need the help of an electrician.</p>
The ON LED does not light up when the mains connector is connected and the unit is switched to ON.	<p>1.- Bad or loose AC connection to the UNIT or the mains outlet.</p> <p>2.- Faulty AC cable.</p> <p>3.- Blown Fuse.</p>	<p>1.- Check your connections.</p> <p>2.- Check the cables, connectors and AC power with a suitable mains tester.</p> <p>3.- Replace the blown fuse for another of the same type and size.</p>
No sound from the unit.	<p>1 - Mains voltage very low or very high.</p> <p>2.- Overheating.</p> <p>3.- Overload or short-circuit.</p> <p>4.- DC at amplifier's output.</p>	<p>1.- Check mains voltage with a suitable mains tester.</p> <p>2.- Check input signal because the level or the EQ are very high.</p> <p>3.- Take the unit to a service centre.</p> <p>4.- Take the unit to a service centre.</p>

Warning

This manual contains needed information for flying D.A.S. Audio line array systems, description of the elements and safety precautions.

To perform any operations related to flying the system, read the present document first, and act on the warnings and advice given.

The goal is to allow the user to become familiar with the mechanical elements required to fly the acoustic system, as well as the safety measures to be taken during set-up and teardown.

Only experienced installers with adequate knowledge of the equipment and local safety regulations should fly speaker boxes.

It is the user's responsibility to ensure that the systems to be flown (including flying accessories) comply with state and local regulations.

The working load limits in this manual are the results of tests by independent laboratories. It is the user's responsibility to stay within safe limits. It is the user's responsibility to follow and comply with safety factors, resistance values, periodical supervisions and warnings given in this manual.

Product improvement by means of research and development is on going at D.A.S. Specifications are subject to change without notice.

To this date, there is no international standard regarding the flying of acoustic systems. However, it is common practice to apply 5:1 safety factors for enclosures and static elements.

For slings and elements exposed to material fatigue due to friction and load variation the following ratios must be met; 5:1 for steel cable slings, 4:1 for steel chain slings and 7:1 polyester slings.

Thus, an element with a breaking load limit of 1000 kg may be statically loaded with 200 kg (5:1 safety factor) and dynamically loaded with 142 Kg (7:1 safety factor).

When flying a system, the working load must be lower than the resistance of each individual flying point in the enclosure, as well as each box.

Hanging hardware should be regularly inspected and suspect units replaced if in doubt.

This is important to avoid injury and absolutely no risks should be taken in this respect. It is highly recommended that you implement an inspection and maintenance program on flying elements, including reports to be filled out by the personnel that will carry out the inspections.

Local regulations may exist that, in case of accident, may require you to present evidence of inspection reports and corrective actions after defects were found.

Absolutely no risks should be taken with regards to public safety. When flying enclosures from ceiling support structures, extreme care should be taken to assure the load bearing capabilities of the structures so that the installation is absolutely safe.

Do not fly enclosures from unsafe structures.

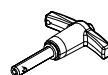
Consult a certified professional if needed.

All flying accessories that are not supplied by D.A.S. Audio are the user's responsibility. Use at your own risk.

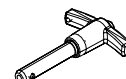
Description and accessories

D.A.S. Audio line array systems, include two rigging structures on each side of the box. Manufactured from zinc plated steel they are painted black and are affixed to an internal plate with special crop resistant screws. Two special stainless steel cam links are assembled to each of the structures, allow for stacking or flying of boxes. On each cabinet are included six quick release pins.

The front rigging guide is used to provide a rigid coupling of a unit and the box above. Whether stacked or flown, the rear guide is used to determine the splay angle between units depending on the hole in which the quick release safety pin is inserted.

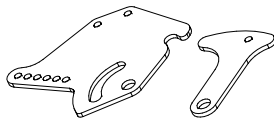


Ø=6mm ; L=17mm

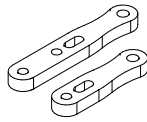


Ø=8mm ; L=35mm

Pasadores de seguridad **Quick release pin**



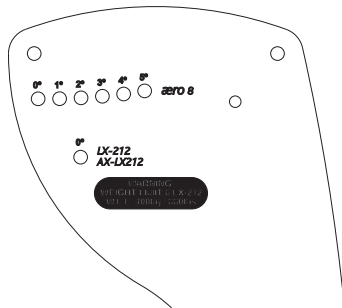
LX-212R



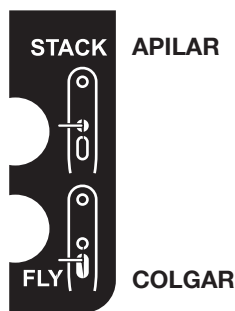
LX-215R & LX-218CR

Guías de LX series
LX series Guides

To facilitate the correct positioning of the guides in the corresponding angle hole of the upper unit (using the quick release safety pins), a sticker indicates the splay angle obtained whether stacked or flown. To secure the guides in the angle holes, 8 mm high resistance quick release safety pins (6 mm in the LX-212R) are used (6 pins per unit).



To fly the systems and define the splay angles, the pin should be inserted in the slot of the rear guide. To stack the systems, the pin should be inserted in the hole of each guide.

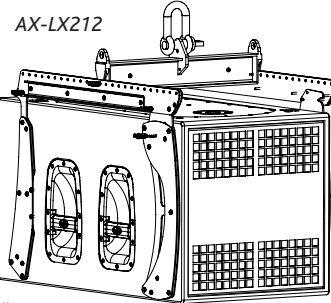


In most cases, to join one box to another the procedure described above will suffice. We will proceed to describe other accessories available for safe and simple stacking, transport and flying of the systems.

See Table of Accessories in SYSTEM DESCRIPTION section (pag.3)

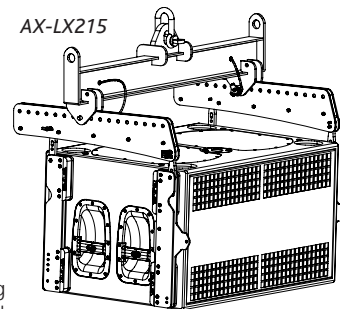
A) AX-LX212, AX-LX215 & AX-AERO50

These rigging structures are comprised of a steel central bar and two detachable side panels that are fixed using high resistance quick release safety pins.



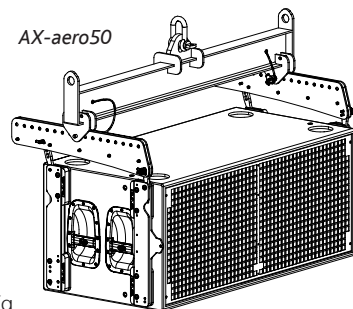
Peso: 13 Kg
Weight: 28.6 lbs
Dimensiones (Al x An x P): 157 x 757 x 549 (mm)
Dimensions (H x W x D): 6.2 x 29.8 x 21.6 (in)
W.L.L.: 400 kgf

They have a centrally located reinforcement which is used to attach the lifting cables. Depending on the position of the safety pins, a different angle of inclination the array will be achieved (see the positions marked on the side panels).

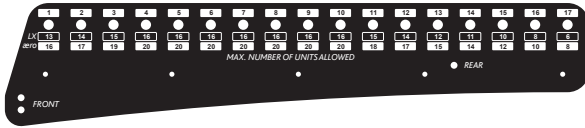
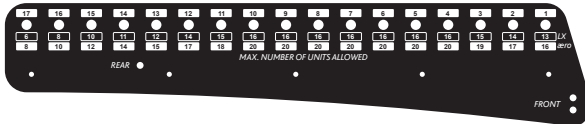


Peso: 45 Kg
Weight: 99 lbs
Dimensiones (Al x An x P): 410 x 1108 x 721 (mm)
Dimensions (H x W x D): 16.1 x 43.6 x 28.4 (in)
W.L.L.: 1700 kgf

The first box will be attached to this structure using 6 safety pins according to the procedure described on the preceding pages. Once this is accomplished, the structure can be left with a vertical orientation taking into regard the position of the safety pin. With the use of the EASE Focus simulation program, determine what position should be used to achieve the desired array inclination.



Peso: 51 Kg
Weight: 112.2 lbs
Dimensiones (Al x An x P): 430 x 1440 x 721 (mm)
Dimensions (H x W x D): 16.9 x 56.7 x 28.4 (in)
W.L.L.: 1700 kgf



C) Front located dolly platforms *PL-LX215* & *PL-LX218C*

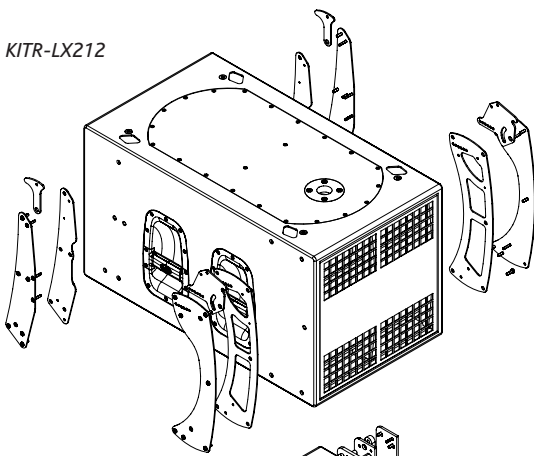
The front located dolly platforms are accessories available, only, for the *LX-215* and the *LX-218C*. On “R” versions, they are included from the factory. They are used for the transport of individual units and facilitate rigging. The platforms are attached to the front rigging hardware of each unit by way of captive pins located on the platform.

Silk-screening AX-aero50 & AX-LX215

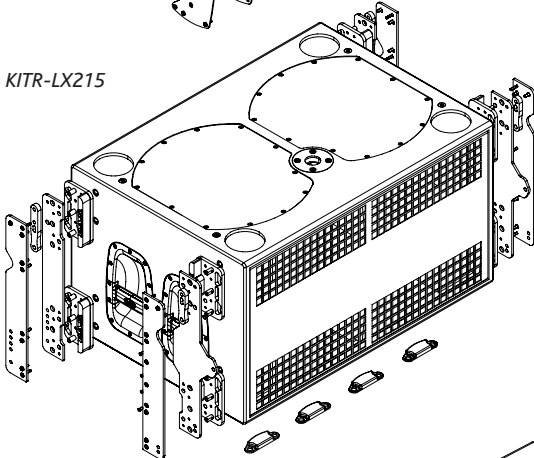
B) KIT “R” (Rigging)

Kits are available to transform “stackable only” cabinets to flyable ones. For example, the *LX-212* can be upgraded to a *LX-212R* by using the *KITR-LX212*.

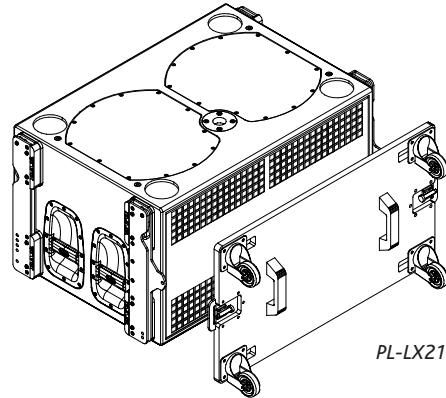
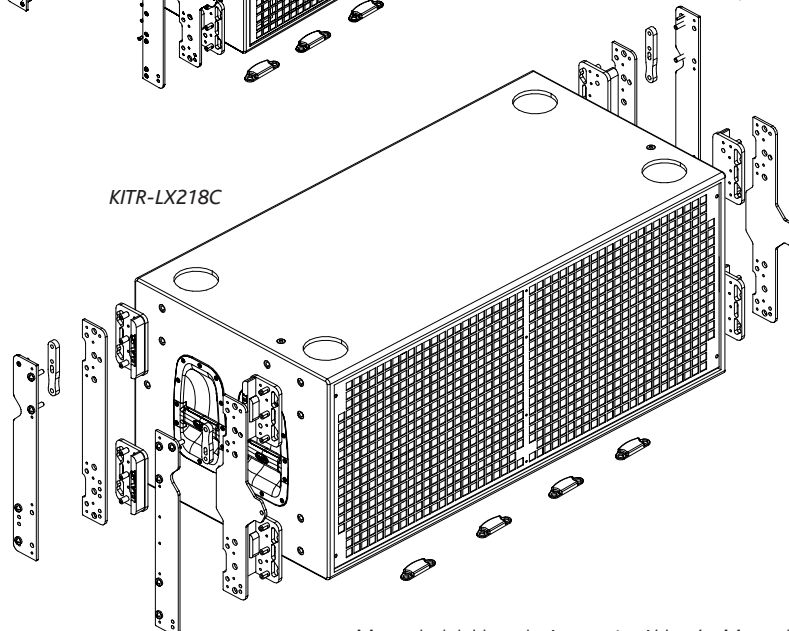
KITR-LX212



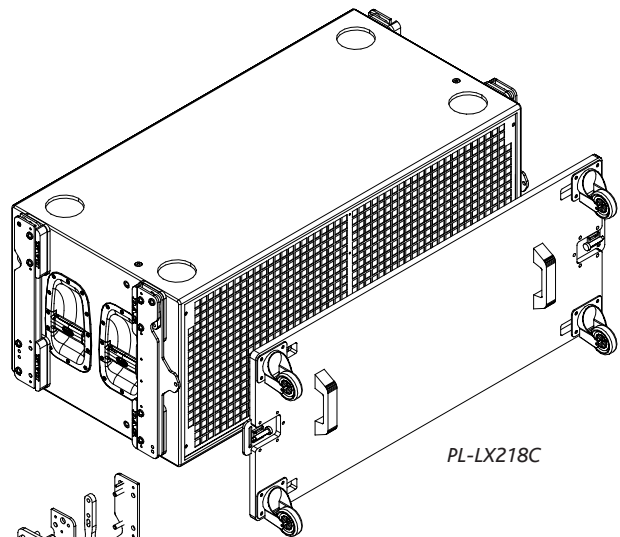
KITR-LX215



KITR-LX218C



PL-LX215

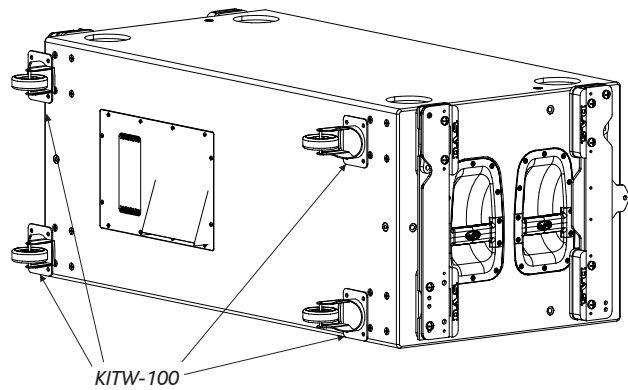
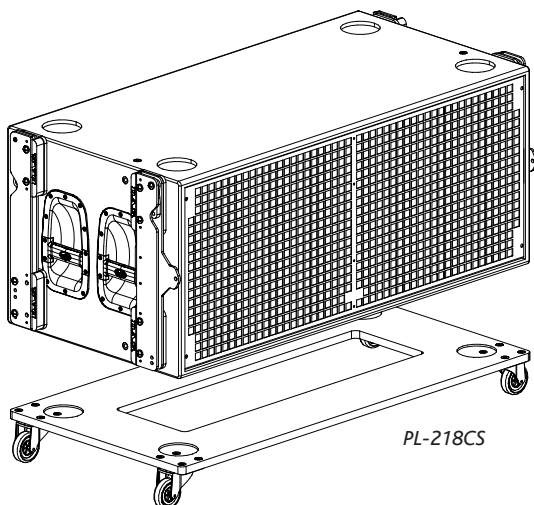
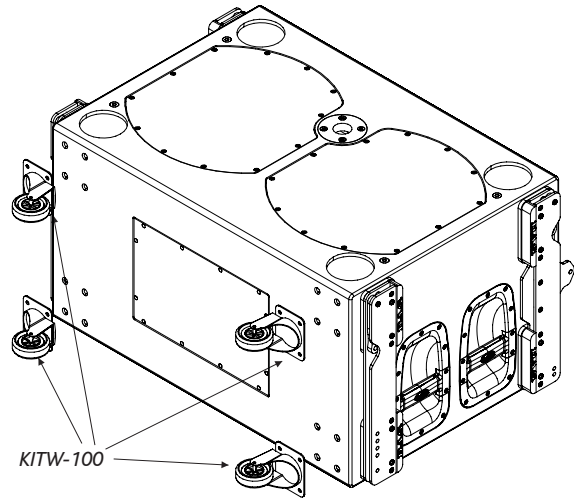
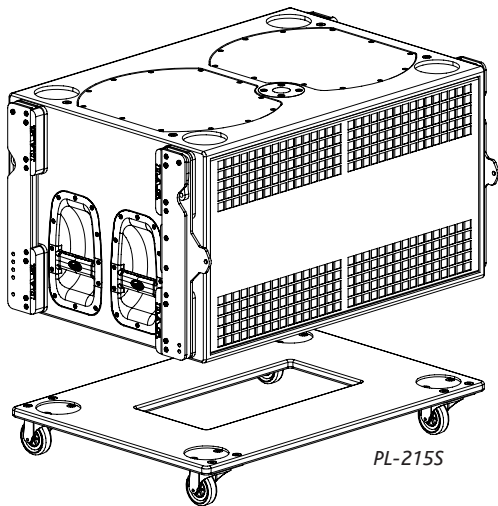
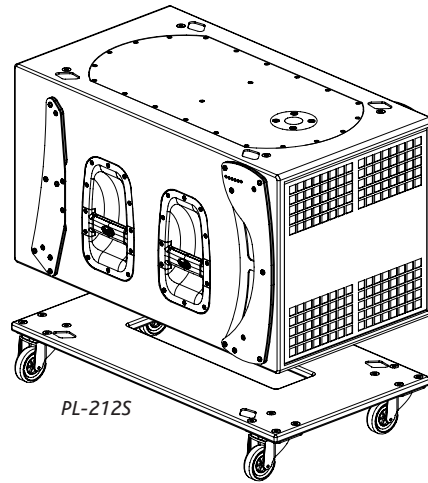


PL-LX218C

D) KITW-100 & platforms: PL-212S, PL-215S y PL-218CS.

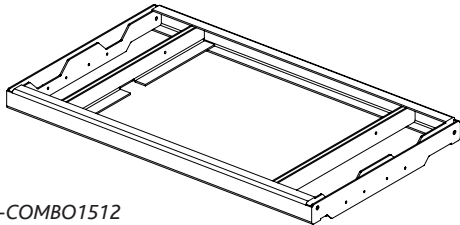
Transport accessories include the following;
KITW-100 caster kit (except for the *LX-212*)
PL-212S dolly panel for the *LX-212*
PL-215S dolly panel for the *LX-215*
PL-218CS dolly panel for the *LX-218C*

The caster kit will not impede cabinet stacking as the wheels are attached to the rear panel of the cabinet. As a safety precaution when maneuvering cabinets, the dolly panels should not exceed a maximum of three (3) units.

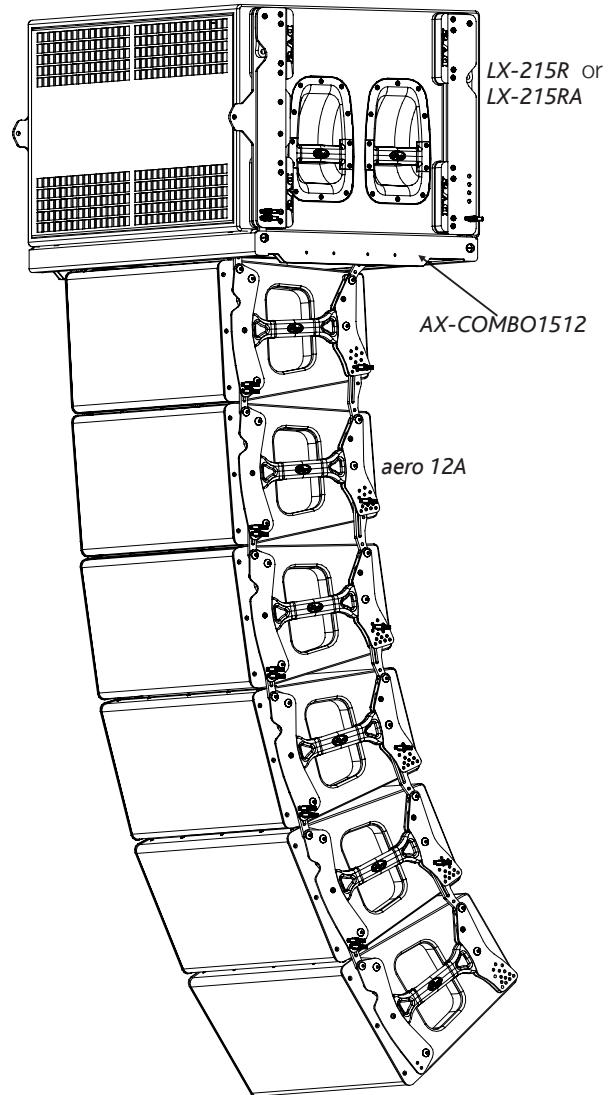


E) AX-COMBO1512

Rigging adapter to suspend the **aero 12A** from the last unit of **LX-215R** or **LX-215RA**. A maximum of six (6) units can be flown from the bumper.



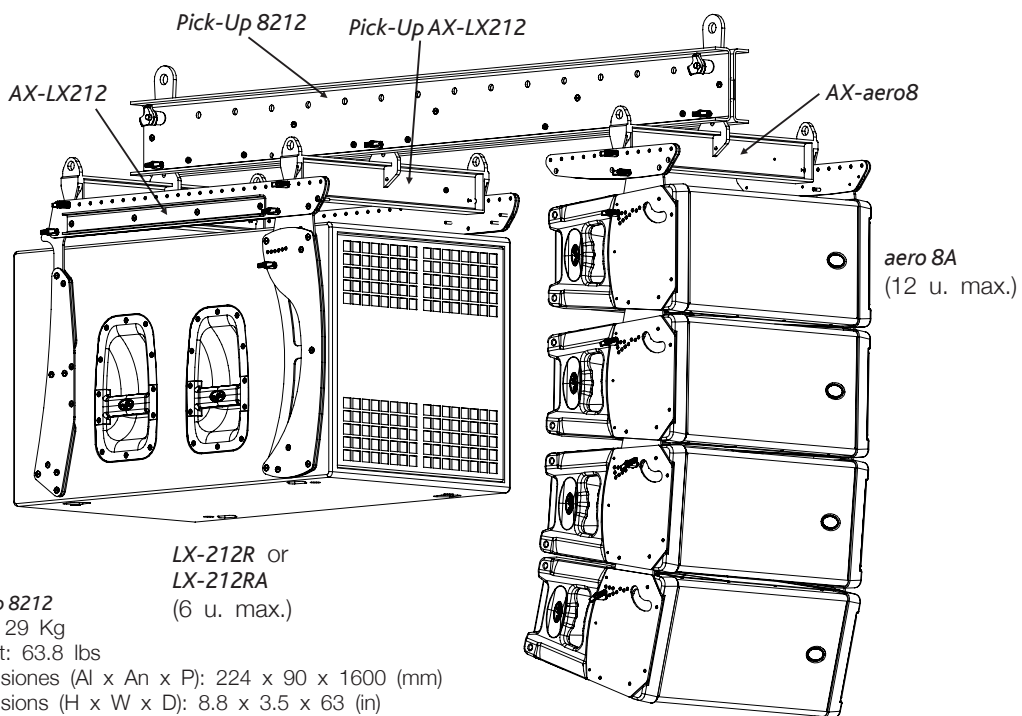
AX-COMBO1512
 Peso: 17 Kg
 Weight: 37.4 lbs
 Dimensiones (Al x An x P): 72 x 968 x 580 (mm)
 Dimensions (H x W x D): 2.8 x 38.1 x 22.8 (in)
 W.L.L.: 170 kgf



E) Other combinations

Due to height or sight line restrictions which make the flying the **LX-212R** or **LX-212RA** at the top of an array impossible, the following configuration can be achieved by way of the accessories **Pick-up 8212** (in combination with the **AX-Aero8**, the **AX-LX212** and the **Pick-upAX-LX212**).

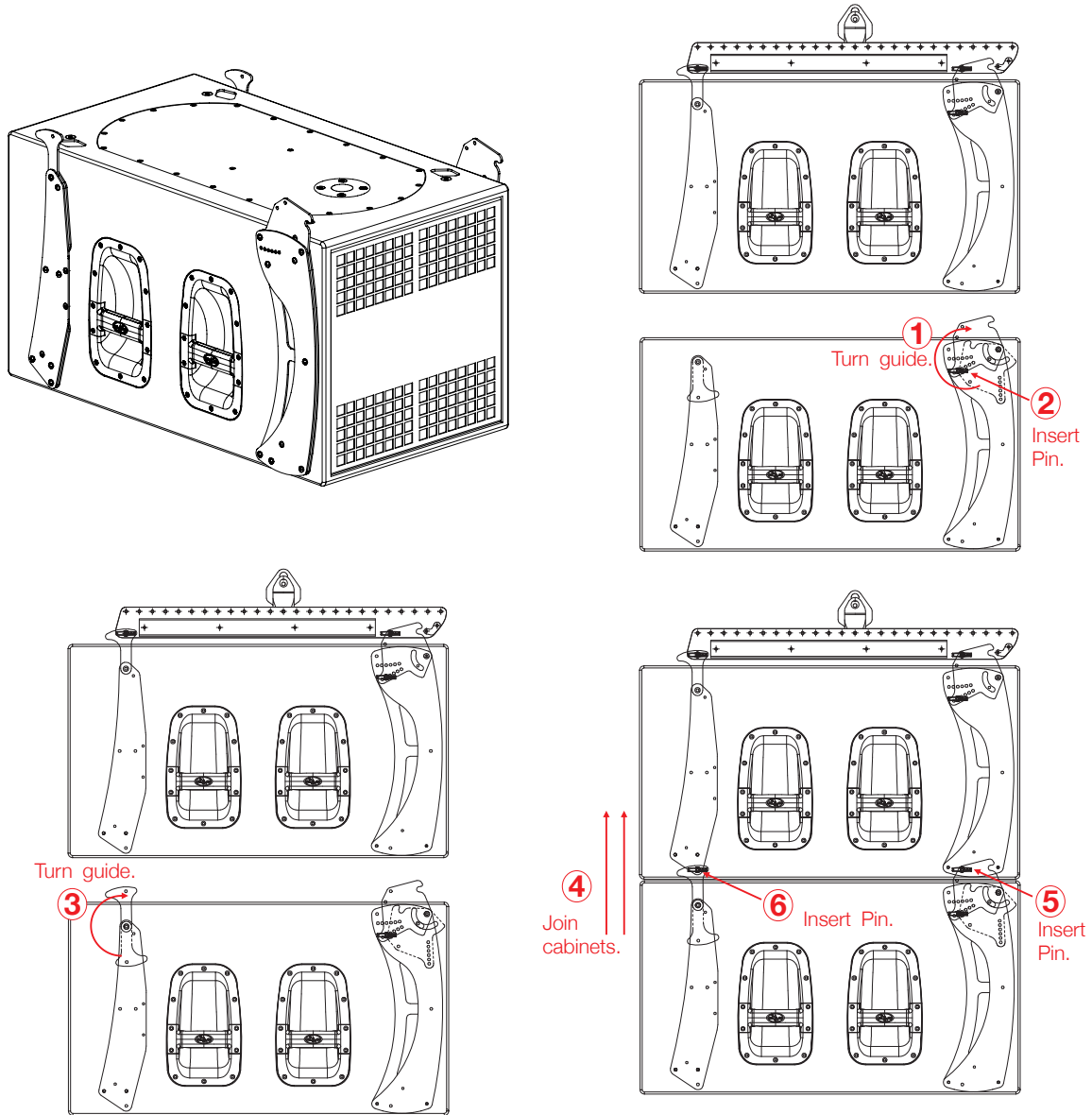
The **LX-212R** (or **LX-212RA**) are flown behind the **aero 8A**. Taking into consideration the weight of the units and the working load limit (W.L.L.) of the accessory, a maximum of six (6) **LX212R** (or **LX-212RA**) and twelve (12) units of the **aero 8A** can be flown. Two pick-up points should be used.



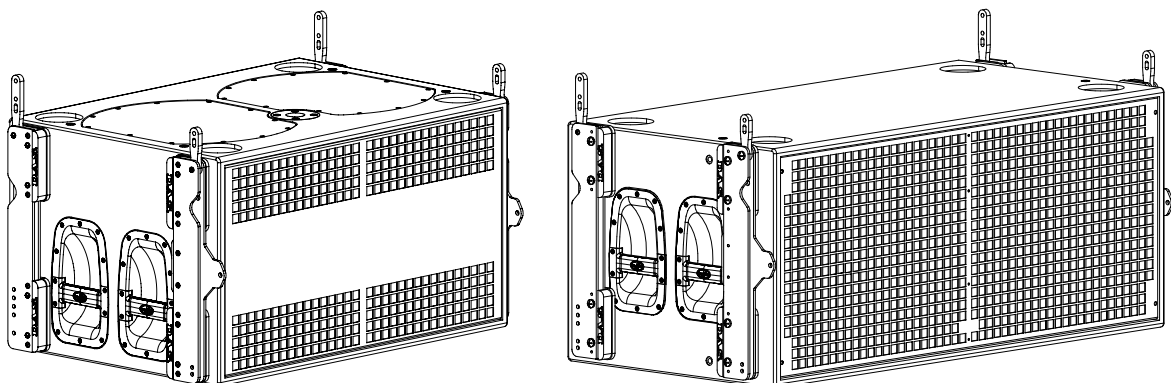
Pick Up 8212
 Peso: 29 Kg
 Weight: 63.8 lbs
 Dimensiones (Al x An x P): 224 x 90 x 1600 (mm)
 Dimensions (H x W x D): 8.8 x 3.5 x 63 (in)
 W.L.L.: 620 kgf

LX-212R or LX-212RA
 (6 u. max.)

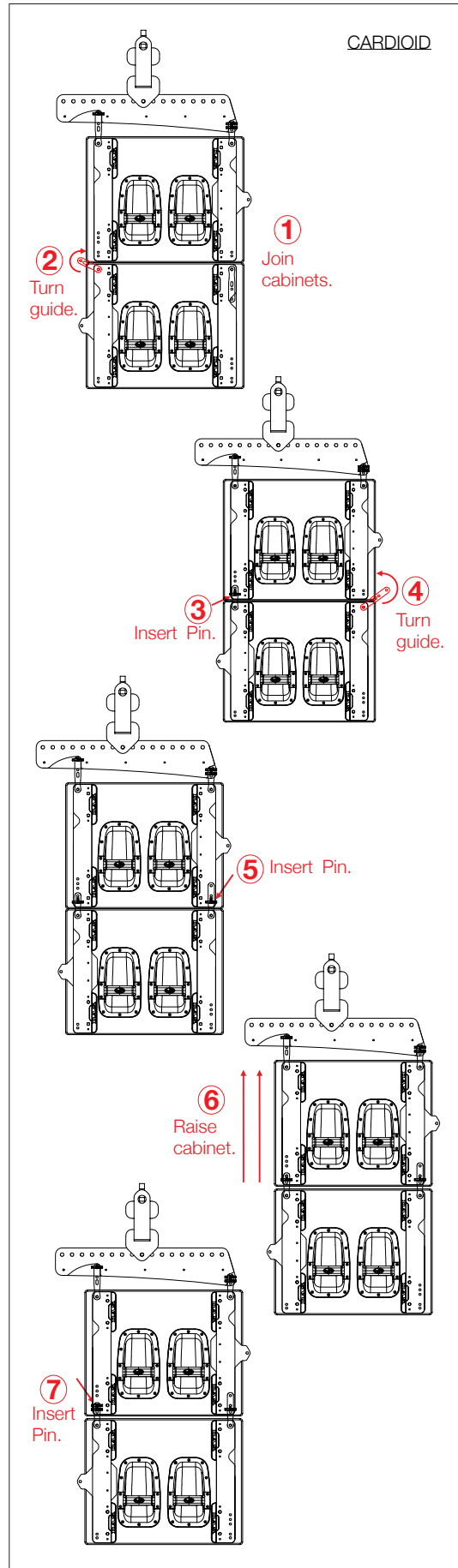
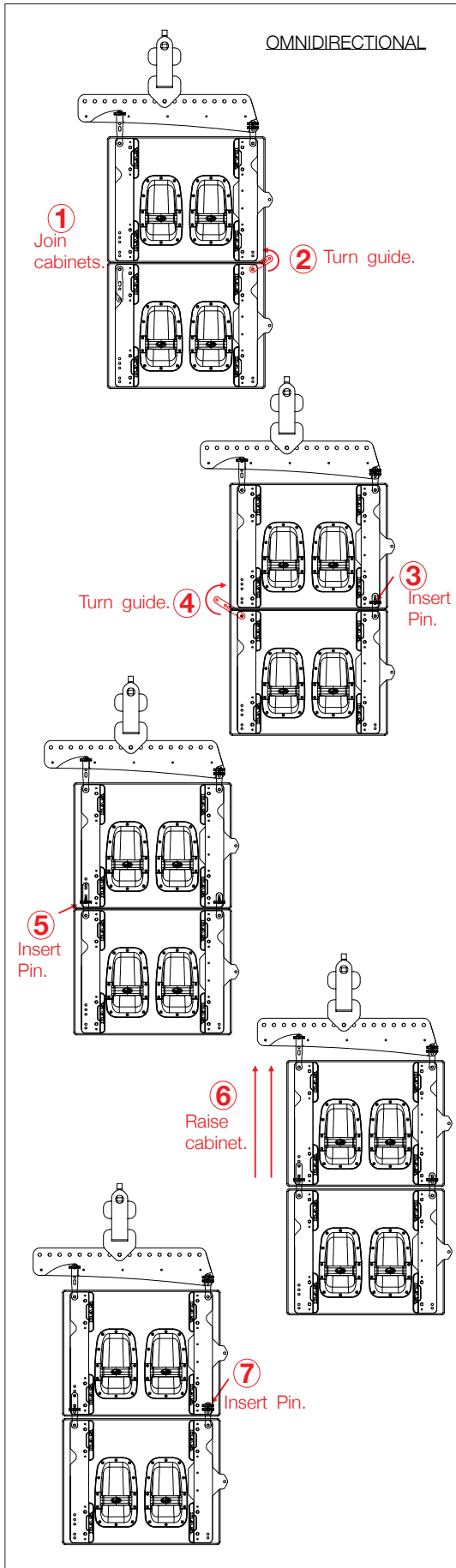
Below you'll find a brief description using figures explaining the rigging of the *LX series* cabinets. First is the *LX-212R* and *LX-212RA* which are shown in an omni directional configuration. All *LX* units can be flown in a cardioid configuration as well.



Finally, an explanation of the rest of the *LX series* cabinets which, although vary slightly in size, use a similar rigging system.



We will show the cardioid configurations separately in order to appreciate the differences and similarities.



SPECIFICATIONS

MODEL	LX-212A / LX-212RA	LX-215A / LX-215RA	LX-218CA / LX-218CRA
Nominal LF Amplifier Power	1800 W (Class D)	1800 W (Class D)	2400 W
Input Type	Balanced Differential Line	Balanced Differential Line	Balanced Differential Line
Input Impedance	Line: 20 kohms	Line: 20 kohms	Line: 20 kohms
Sensitivity	Line: 1.95 V (+8 dBu)	Line: 1.95 V (+8 dBu)	Line: 1.95 V (+8 dBu)
Frequency Range (-10 dB) ⁽¹⁾	45 Hz -138 Hz	45 Hz -138 Hz	28 Hz - 100 Hz
Rated Maximum Peak SPL at 1 m ⁽²⁾	136 dB	140 dB	142 dB
Transducers/Replacement Parts	LF: 2 x 12LXN/GM 12LX	LF: 2 x 15LXN/GM 15LX	LF: 2 x 18LXN/GM 18LX
Enclosure Geometry	Rectangular	Rectangular	Rectangular
Enclosure Material	Birch Plywood	Birch Plywood	Birch Plywood
Color/Finish	Black Paint	Black Paint	Black Paint
Rigging System Splay Angles	Ground Stackable Integrated in box design (RA)	Ground Stackable Integrated in box design (RA)	Ground Stackable Integrated in box design (RA)
Connectors	INPUT: 2 x Female XLR LOOP THRU: 2 x Male XLR AC INPUT: PowerCon NAC 3 FCA AC OUTPUT: Powercon NAC 3 FCB	INPUT: 2 x Female XLR LOOP THRU: 2 x Male XLR AC INPUT: PowerCon NAC 3 FCA AC OUTPUT: Powercon NAC 3 FCB	INPUT: Female XLR LOOP THRU: Male XLR AC INPUT: PowerCon
AC Power Requirements	6A, 115 V, 50 Hz/60 Hz 3A, 230 V, 50 Hz/60 Hz	6A, 115 V, 50 Hz/60 Hz 3A, 230 V, 50 Hz/60 Hz	Universal Mains, 85 – 230 V (dual voltage), 1200VA
Dimensions (H x W x D)	48.8x48x87 cm / 48.8x52.6x87 cm 19.2x18.9x34.3 in / 19.2x20.7x34.3 in	50.5x90.2x63.2 cm / 50.5x99.7x66.2 cm 19.9x35.5x24.9 in / 19.9x39.3x26.1 in	55x128x63.2 cm/55x135x69.6 cm 22x51x24.9 in / 22x54x27.4 in
Weight	53 kg / 60.5 kg 116.6 lbs / 133.1 lb	68.5 kg / 86.5kg 150.7 lbs / 190.3 lb	80.5 kg / 99.5 kg 177.1 lb / 218.9 lb
Accessories	AX-LX212 (R) KITR-LX212 Rigging Hardware Kit Pick-up AX-LX212 (R) Pick-up 8212 (R) PL-212S Flat Bed Dolly TRD-6	AX-LX215 Rigging Grid (R) AX-Combo1512 (R) KITW-100 Caster Kit KITR-LX215 Rigging Hardware Kit PL-LX215 Dolly Panel (R included) PL-215S Flat Bed Dolly Pick-up AX-LX215 (R) TRD-6	AX-aero38 Rigging Grid (R) AX-aero50 Rigging Grid (R) AX-Combo Rigging Adapter AX-Combo12 Rigging Adapter (R) KITR-LX218C Rigging Hardware Kit KITW-100 Caster Kit Pick-up AX-aero50 PL-LX218C Dolly Panel (R included) PL-218CS Flat Bed Dolly

to 160Hz.

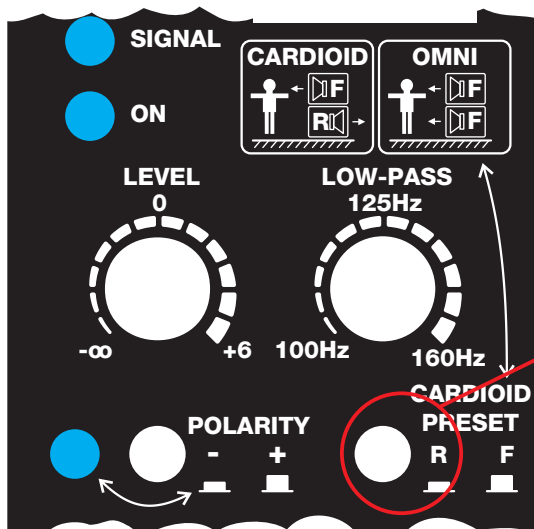
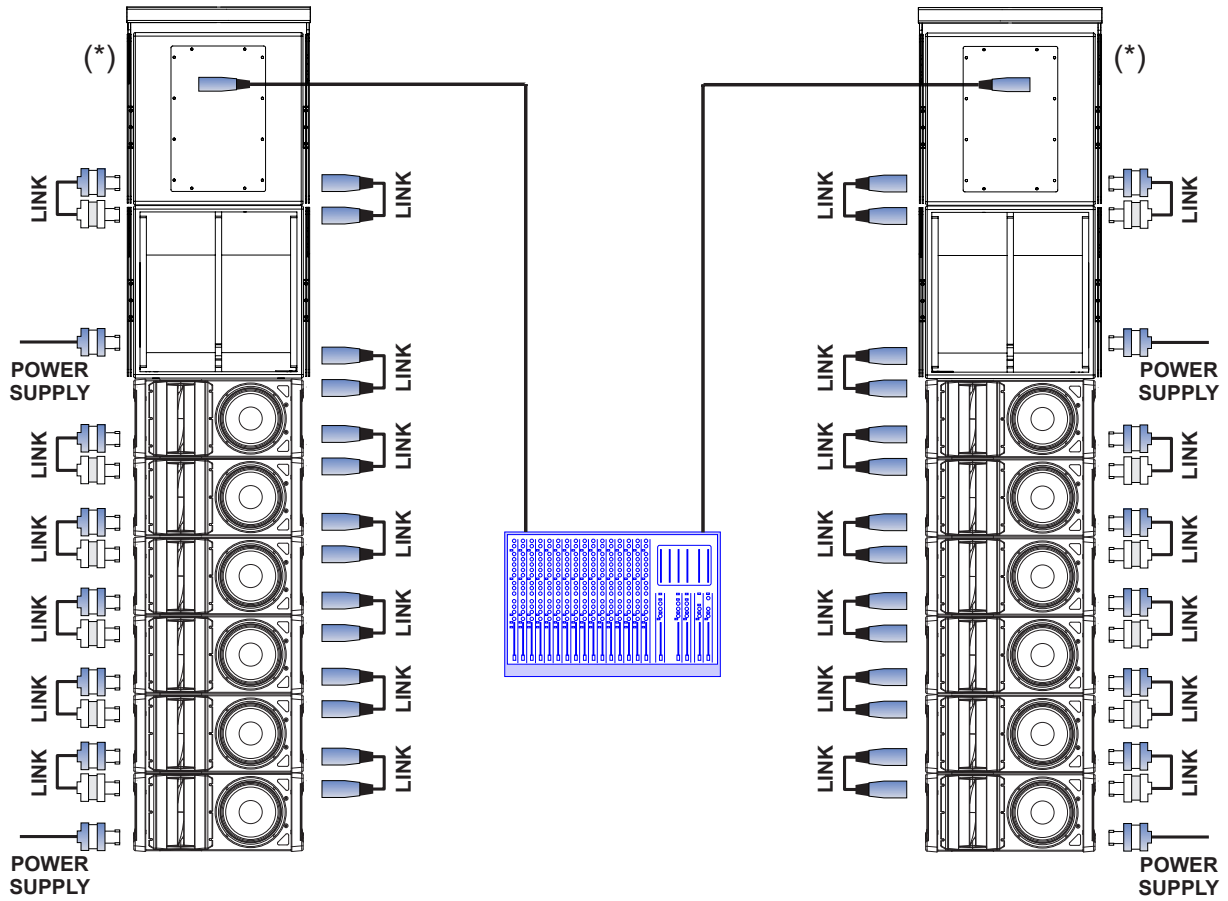
Notes: 1. Frequency range measured with Low Pass filter set up at 125Hz. Amplifier includes Variable Low pass filter from 100Hz
2. Maximum calculated Peak SPL based on sensitivity and RMS power handling.

MODEL	LX-212 / LX-212R	LX-215 / LX-215R	LX-218C / LX-218CR
Frequency Range (-10 dB)	45 Hz – 138 Hz	45 Hz – 138 Hz	28 Hz - 100 Hz
RMS (Average) Power Handling ⁽¹⁾	1600 W	1600 W	2000 W
On-Axis Sensitivity 1 W / 1 m	99 dB SPL	102 dB SPL	103 dB SPL
Rated Maximum Peak SPL at 1 m ⁽²⁾	136 dB	140 dB	142 dB
Transducers/Replacement Parts	2 x 12LXN/GM 12LX	2 x 15LXN/GM 15LX	2 x 18LXN/GM 18LX
Nominal Impedance	4 ohms	4 ohms	4 ohms
Recommended Amplifier Power	2 x 1800 W @ 4 ohms (2 units LX-212)	2 x 1800 W @ 4 ohms (2 units LX-215)	2 x 2400 W @ 4 ohms (2 units LX-218)
Enclosure Geometry	Rectangular	Rectangular	Rectangular
Enclosure Material	Birch Plywood	Birch Plywood	Birch Plywood
Color/Finish	Black Paint	Black Paint	Black Paint
Rigging System	Ground Stackable Integrated in box design (R)	Ground Stackable Integrated in box design (R)	Ground Stackable Integrated in box design (R)
Connectors	2 x NL8 wired ±1	2 x NL8 wired ±1	2 X NL8 wired ±1
Dimensions (H x W x D)	48.8x48x87 cm / 48.8x52.6x87 cm 19.2x18.9x34.3 in/19.2x20.7x34.3 in	50.5x90.2x63.2 cm / 50.5x99.7x66.2 cm 19.9x35.5x24.9 in / 19.9x39.3x26.1 in	55x128x63.2 cm / 55x135x69.6 cm 22x51x24.9 in / 22x54x27.4 in
Weight	49.5 kg / 57 kg 108.9 lb / 125.4 lb	65 kg / 83 kg 143 lb / 182.6 lb	75.5 kg / 94.5 kg 166.1 lb / 207.9 lb
Accessories	AX-LX212 (R) KITR-LX212 Rigging Hardware Kit Pick-up AX-LX212 (R) Pick-up 8212 (R) PL-212S Flat Bed Dolly TRD-6	AX-LX215 Rigging Grid (R) AX-Combo1512 (R) KITW-100 Caster Kit KITR-LX215 Rigging Hardware Kit PL-LX215 Dolly Panel (R included) PL-215S Flat Bed Dolly Pick-up AX-LX215 (R) TRD-6	AX-aero38 Rigging Grid (R) AX-aero50 Rigging Grid (R) AX-Combo Rigging Adapter (R) AX-Combo12 Rigging Adapter (R) KITR-LX218C Rigging Hardware Kit KITW-100 Caster Kit Pick-up AX-aero50 PL-LX218C Dolly Panel (R included) PL-218CS Flat Bed Dolly

Notes: 1. Based on a 2 hour test continuously applying 6 dB crest factor pink noise (IEC shaped).
2. Maximum calculated Peak SPL based on sensitivity and RMS power handling.

CONFIGURATION 1

12 x æro 8A
4 LX-212RA
Theater Auditorium



(*) Cabinets facing rear:
Press Cardioid Preset button to
"R" position to activate cardioid mode.

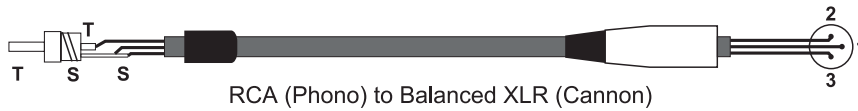
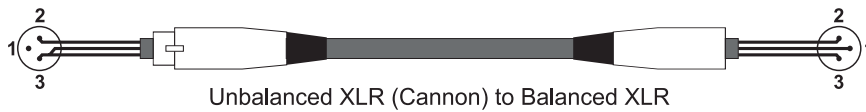
APPENDIX: Line connections: unbalanced and balanced

There are two basic ways to transport an audio signal with microphone or line level:

Unbalanced line: Utilising a two conductor cable, it transports the signal as the voltage between them. Electromagnetic interference can get added to the signal as undesired noise. Connectors that carry unbalanced signals have two pins, such as RCA (Phono) and ¼" (6.35mm, often referred to as jack) mono. 3 pin connector such as XLR (Cannon) may also carry unbalanced signals if one of the pins is unused.

Balanced line: Utilising a three conductor cable, one of them acts as a shield against electromagnetic noise and is the ground conductor. The other two have the same voltage with respect to the ground conductor but with opposite signs. The noise that cannot be rejected by the shield affects both signal conductors in the same way. At the device's input the two signals get summed with opposite sign, so that noise is cancelled out while the programme signal doubles in level. Most professional audio devices use balanced inputs and outputs. Connectors that can carry balanced signal have three pins, such as XLR (Cannon) and ¼" (6.35mm) stereo.

The graphs that follow show the recommended connection with different types of connectors to balanced processor or amplifier inputs. The connectors on the left-hand side come from a signal source, and the ones on the right hand side go to the inputs of the processor or amplifier. Note that on the unbalanced connectors on the left-hand side, two terminals are joined in side the connector. If hum occurs with balanced connections, try disconnecting the sleeve (ground) on the input connector. Note that the illustrations show what should be connected to what, but that pin locations on an actual XLR connector are different. Also, pin 2 hot is assumed on XLR connectors.



www.dasaudio.com

UMLX_01



D.A.S. AUDIO, S.A.

C/ Islas Baleares, 24
46988 Fuente del Jarro
Valencia, SPAIN
Tel. 96 134 0525
Tel. Intl. +34 96 134 0860
Fax 96 134 0607
Fax Intl. +34 96 134 0607

D.A.S. AUDIO OF AMERICA, INC.

Sunset Palmetto Park
6816 NW 77th Court.
Miami, FL. 33166 - U.S.A.
TOLL FREE: 1-888DAS4USA
Tel. +1 305 436 0521
Fax +1 305 436 0528

D.A.S. AUDIO ASIA PTE. LTD.

25 Kaki Bukit Crescent #01-00/02-00
Kaki Bukit Techpark 1
Singapore 416256
Tel. +65 6742 0151
Fax +65 6742 0157