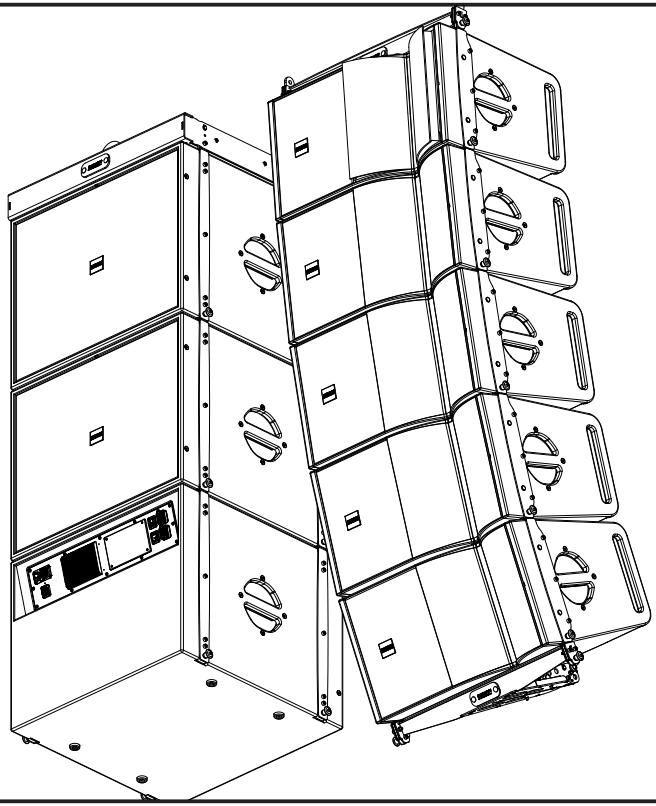
Loudspeaker system

# User's manual



# AX12

Full-range▶Compact▶No compromises
2-way▶Built-in DSP▶Powered line array loudspeaker

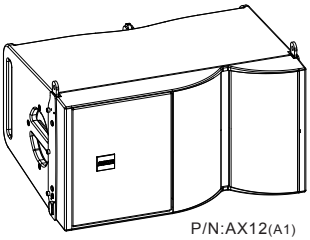
# AX18

Compact▶Built-in DSP▶Powered Flyable Subwoofer

VN:1

Science acoustics evolution

# Specification



P/N:AX12(A1)
060200000246801 L
060200000247801 R

Neo magnet

Rainproof Design

Preset curvature Auto-lock

Tow flared ends vents

Panflex 70/90/110

Perfect line sound source

AX12 is a compact, full-range 2-way line array loudspeaker featuring integrated DSP and Class-D amplification.

► Transducer Configuration:LF: 12" neodymium magnet driver with aluminum frame / 3.5" copper-clad aluminum flat wire voice coil.HF: Neodymium magnet titanium diaphragm 3" compression driver with 1.4" throat diameter.

► Portable & Mobile Friendly:It has a width of 64.5 cm and a net weight of only 28.5 kg. The loudspeaker is fitted with 5 carry handles, light enough for an adult to lift with one hand.

► Refined Acoustic Architecture:The enclosure is constructed from full birch plywood, paired with an unequal-diameter port bass reflex acoustic structure. It delivers lower group delay and optimized enclosure tuning, achieving premium sound performance from a compact 12" cabinet.For superior acoustic output, it adopts core high-frequency acoustic technologies including full-size cone-cut cylindrical wave equalizers, combined with a horizontally variable directivity non-perforated dispersion horn. The waveguide opening is designed flush with the cabinet height to ensure perfect physical summation. The large horn aperture enables frequency control down to below 800 Hz.The steel grille incorporates a proprietary anti-vibration phase plate, allowing seamless mid-frequency summation between multiple sound sources.The cabinet surface is finished with a matte thickened polyurea coating applied via high-temperature adhesion, offering excellent surface hardness, outstanding waterproof, UV anti-sun and abrasion-resistant properties.

► Innovative 3-Point Rigging Structure:The waveguide openings are aligned with a tangent curve angle adjustment design. When adjusting the curvature angle, the physical stacking gap of the line array high-frequency waveguide will not be altered by differing angles between cabinets. This ensures even sound field coverage at both near and far listening distances, with precise acoustic summation delivered to the audience area.The rigging system is designed for easy single-person operation. It can be vertically assembled in groups of three with the AX12-VT flight case, with preset ground curvature angles that lock automatically after hoisting, enabling safe and fast rigging installation.If on-site curvature parameter adjustment is required, the AX12-BP back pull frame and chain hoist can be used for direct adjustment under load, without lowering the array for rework.

► Integrated Drive Module:It consists of a digital power amplifier with a peak power of 2500W+800W and a 32-bit/192 kHz DSP. The DSP is embedded with IIR, FIR and other modules for host computer control, which further corrects phase response to achieve optimal acoustic summation performance.The connectors feature an IP65 fully sealed hole-free design, allowing outdoor operation without an additional external rain cover.Four factory preset scene modes are stored onboard, switchable via front panel touch keys without PC connection for tuning. For advanced control, it can network with a wireless router to perform online tuning over a TCP/IP local area network.An online polling indicator is fitted on the front of each cabinet, enabling software-based device calling for controlled units.

► Comprehensive System Compatibility:Two subwoofer models are available. The AX18 is purpose-built for seamless integration with the AX12, a subwoofer supporting forward and reverse rigging that can form a cardioid directional sub-bass array as required. It is only 50 cm tall with a net weight of 42.5 kg, loaded with an 18" neodymium driver with a 4" voice coil.The BX28 is a floor-standing active dual 18-inch subwoofer with long-throw transducers and dual-module drive.The multi-functional accessory design reduces the total number of required fittings. The AX18 can be floor-stacked directly with the AX12 for many applications that do not require suspension rigging.For more powerful sub-bass output for large-scale events, the BX28 subwoofer is recommended. The matching AX12-BP 3-in-1 bracket allows stacking AX12 line array cabinets on top, with adjustable projection angles on demand.

**Performance:**
Maximum Linear SPL(1):>138dB(AES75)
Maximum SPL(2):>142dB( ≈40m preset)
Usable bandwidth:46~18kHz

**Coverage Pattern:**
Vertical:10° Trapezoidal | Varies with array size and configuration
Horizontal:70° | 110° symmetric or 90° asymmetric
IP Rating:IP54 | IEC 60529

**Transducer Configuration:**
LF:1×12"Neodymium cone driver | V.C:3.5" | 8Ω | 1400Wprogram
HF:1×3"Titanium diaphragm | Neodymium | T.D:1.4" | 8Ω | 200Wprogram

**Acoustical load:**
LF:Bass-reflex with tow flared ends vents
HF:Plane waveguide with Pan-flex technology

**Power Module:**
Audio Input(2):+17 dBu Max, +4 dBu Nominal @ 20 kΩ (XLR balanced)
Power Output(peak):2500W(LF)+800W(HF)@8Ω | THD+N:<1%PFC Class-D
AC Input:AC96~265V/50~60 Hz Adaptive
AC Power Consumption(3):2A@230V | 4.7A@100V
Cooling:Convection, external aluminum heatsink internal on-demand fan
Processor:32bit I/O up to a sample rate of 192 kHz | 139 dB DNR
Signal Processing:24Bit/96k sample rate | IIR | FIR filters | Delay | limiters
Panel:4mm aluminum plate CNC | Non-porous touch panel
Display LED:Network | Signal | Clipping | Protection
Preset | Front call LED indicator(soft control)
Control Interface:TCP/IP(Windows PC only)

**Connectors**(IP65 Rated)**:**
AC Power Input:Dual powerCON TRUE1(Inlet/Outlet)
Audio Input:Dual 3-pin XLR(In/Thru)
Networking:Dual etherCON(RJ45 In/Thru)

**Physical:**
3-point captive rigging system,5 handles,quick release Ø10pins, steel with anti-corrosion coating;
Preset the curvature Angle on the ground and lock it automatically;
Curvature Angle adjustment technology for physical alignment of tangent waveguide surfaces;
Phase plate resonance elimination technology;
Inter-enclosure Angle (deg):0.25°, 1°, 2°, 3°, 4°, 5°, 7.5° 10°;

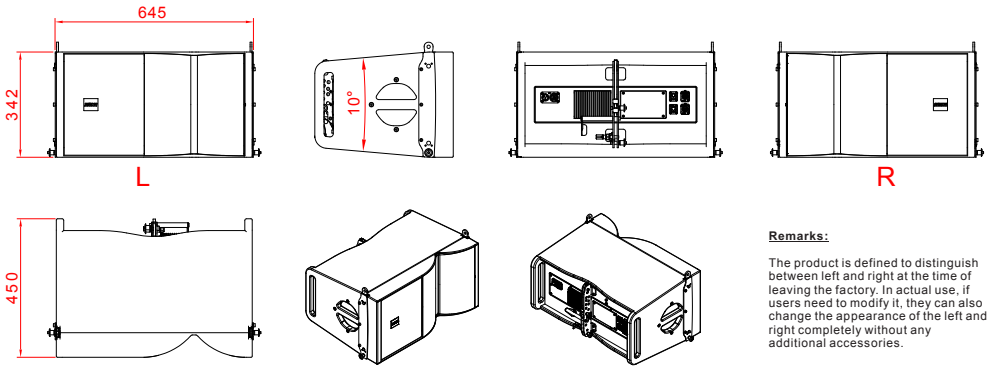
**Application:**
Rigging:Minimum 2,maximum 16 units line array(AX12-AF only)
Stacking:Minimum 1,maximum 6 units line array(AX12-AF or AX12-BP)

**Cabinet:**
Polyurea coating;Premium birch plywood;2mm Coated steel grill;Acoustically neutral 3D fabric; logo rotatable;The left and right structures can be distinguished through assembly;

**N.W:**28.5kg | 62.8lb **G.W:**32.5kg | 71.7lb

Dimensions (W × H × D):645x342x450mm (25.4x13.5x17.7inches)
Package size (L × W × H):570x460x740mm(28.7x18.1x29.1inches)

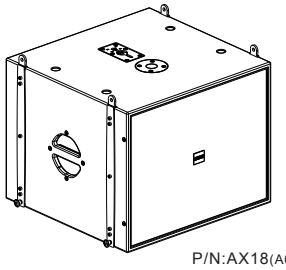
Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
(1)Measured Maximum Linear SPL at 1m according to AES75 standard using 18dB crest factor M-Noise.
(2)Measured Maximum SPL at 1 m under full space using burst noise.
(3)1/8 power is representative of current draw with typical music program material with occasional clipping.
Specifications subject to change without prior notice.




**Remarks:**

The product is defined to distinguish between left and right at the time of leaving the factory. In actual use, if users need to modify it, they can also change the appearance of the left and right completely without any additional accessories.

## Specification



P/N:AX18(A0)
060200000252800

Rainproof Design

Nd
Neo magnet

Cardioid array

Tow flared ends vents

**AX18** is a compact subwoofer system with integrated DSP and Class-D amplification, optimized for suspension applications.

► **Loudspeaker Configuration:** Equipped with an 18" neodymium magnet speaker with an aluminum frame and a 4" voice coil, housed in a birch plywood enclosure with an unequal-port bass reflex structure.

► **Portable for Mobile Applications:** Compact and small-sized, fitted with two pull handles. It is only 64.5 cm in width and weighs just 42.5 kg, bringing great convenience for mobile rigging and installation.

► **Refined Detail Design:** The steel grille is fitted with a proprietary anti-vibration phase plate structure to eliminate resonance noise from the grille. The 4-point symmetric rigging design allows forward/reverse stacking or suspension mounting. It can be directly hung with the AX12-FSA mounting bracket, or via the AX12-AF hanging adapter bracket. The cabinet surface adopts a matte extra-thick polyurea coating with high-temperature adhesion, delivering excellent surface hardness, outstanding water resistance, UV resistance against sun exposure and abrasion resistance.

► **Flexible Array Combination:** It can be configured into a cardioid radiation array as required. Each cabinet is only 50 cm tall; stacking three units reaches a total height of just 1.5 meters. For standard installation, a cardioid stacked array of 3 pcs AX12 plus 3 pcs AX18 is recommended.

► **Rainproof Design Module:** The built-in 32-bit/192 kHz DSP digital signal processor supports IIR|FIR modules and PC upper computer control. The connectors adopt an IP65 fully sealed hole-less design, enabling outdoor open-air operation without an extra rain cover. The unit has 4 factory preset scene modes, switchable via the panel touch keys without computer programming. For advanced control, it can form a network with a wireless router for online tuning via TCP/IP local area network. An online polling indicator is mounted on the front of each cabinet, which allows targeted device calling via software for controlled units.

► **Multi-functional Application:** The 18" driver is powered by a Class D amplifier with a peak power of 2500W. An extra channel with 800W peak power is independently output via the NL4 speaker connector for connecting conventional passive loudspeakers. It can be combined with standard 35mm speaker poles to build a full-range audio system.

**Performance:**
Maximum Linear SPL(1):>136dB(AES75)
Maximum SPL(2):>140dB( 120 preset)
Usable bandwidth:35~250Hz
Coverage Pattern:Omni or Cardioid (subwoofer array configuration)
IP Rating:IP54 | IEC 60529

**Transducers:**
18"Neodymium cone driver | V.C:4" | 8 Ω | 2000Wprogram

**Acoustical load:**
Bass-reflex with tow flared ends vents

**Power Module:**
Audio Input(2):+17 dBu Max, +4 dBu Nominal @ 20 kΩ (XLR balanced)
Power Output(peak):2500W+800W@8Ω | THD+N:<1%PFC Class-D
AC Input:AC96~265V/50~60 Hz Adaptive
AC Power Consumption(3):2A@230V | 4.7A@100V
Cooling:Convection, external aluminum heatsink internal on-demand fan
Processor:32bit I/O up to a sample rate of 192 kHz | 139 dB DNR
Signal Processing:24Bit/96k sample rate | IIR | FIR filters | Delay | limiters
Panel:4mm aluminum plate CNC | Non-porous touch panel
Display LED:Network | Signal | Clipping | Protection
Preset | Front call LED indicator(soft control)
Control Interface:TCP/IP(Windows PC only)

**Connectors**(IP65 Rated):
AC Power Input:Dual powerCON TRUE1(Inlet/Outlet)
Audio Input:Dual 3-pin XLR(In/Thru)
External full range loudspeaker:NL4(1±)
Networking:Dual etherCON(RJ45 In/Thru)

**Physical:**
4-point captive rigging system,2 handles,quick release Ø10 pins,
steel with anti-corrosion coating;Phase plate resonance elimination technology;
AX12 Stacking & Ø35+M20 support;

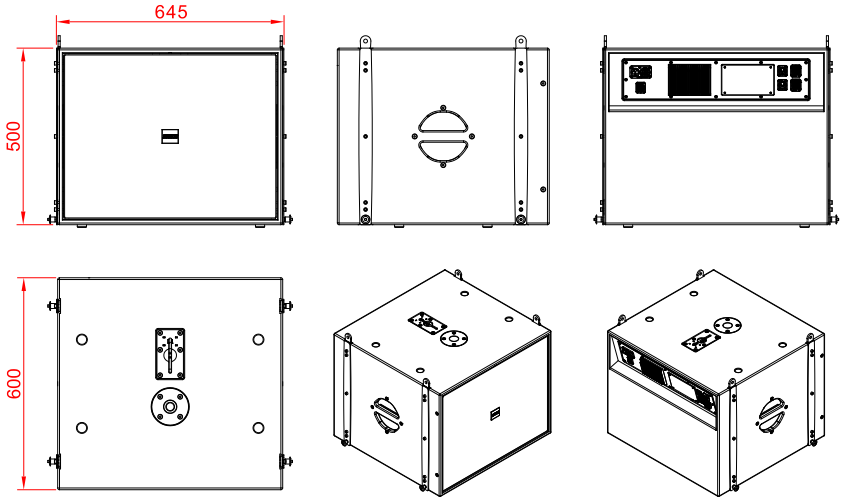
**Application:**
Rigging:maximum 12 units array(AX12-AF only)

**Cabinet:**
Polyurea coating;Premium birch plywood;2mm Coated steel grill;
Acoustically neutral 3D fabric;

**N.W:**42.5kg | 93.7lb **G.W:**48.8kg | 105.4lb

Dimensions (W×H×D):645x500x600mm (25.4x19.7x23.6 inches)
Package size (L×W×H):758x718x613mm(29.8x28.3x24.1 inches)

Recommended maximum operating frequency range. Response depends on loading conditions and room acoustics.
(1)Measured Maximum Linear SPL at 1m according to AES75 standard using 18dB crest factor M-Noise.
(2)Measured Maximum SPL at 1 m under full space using burst noise.
(3)1/8 power is representative of current draw with typical music program material with occasional clipping.
Specifications subject to change without prior notice.



## AX12-AF(A1)

Array Frame for AX12 and AX18

**Highlights:**

- Compact and lightweight design
- Compatible with AX12 and AX18
- Enables ground stacking AX12 arrays
- Precision pick-point resolution
- Extension Bar 2 in 1 design



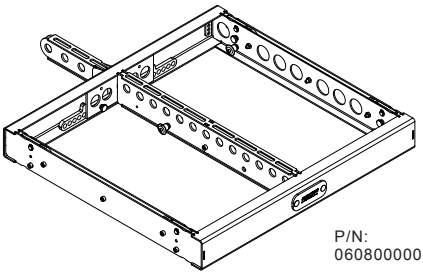
Bow shackle
size: 5/8"(3.25t)
Not included in the package

**WLL:**600kg | 1323lb

**N.W:**13kg | 28.7lb **G.W:**14.5kg | 32lb

**Dimensions**(mm):W651 x H76 x D600(The main beam is extended by 200mm)

**Package size**(mm):L840 x W665 x H98



P/N:
060800000085001

## AX12-BP(A0)

Base Plate | Array Frame | Pull Back for AX12

**Highlights:**

- 3 in 1 Versatile lightweight design
- Array Frame for AX12 support for up to 6 cabinets
- Pull-back accessory for AX12
- Stacking AX12 arrays on the BX28 | Angle range: ±5°

**WLL:**200kg | 440lb

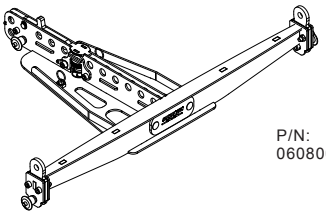
**N.W:**4.8kg | 10.6lb **G.W:**5.9kg | 13 lb

**Dimensions**(mm):W644 x H58 x D400

**Package size**(mm):L680 x W430 x H120



Bow shackle
size: 3/8"(1t)
Not included in the package



P/N:
060800000091000

## AX12-FSA(A0)

Flyable Subwoofer Adapter for AX12 AX18

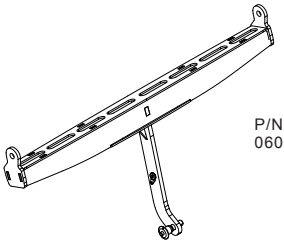
- For hooking in flown configuration between AX18 and AX12

**WLL:**150kg|330lb

**N.W:**3kg | 6.5lb **G.W:**3.5kg | 7.7lb

**Dimensions**(mm):W634 x H50 x D268

**Package size**(mm):L660 x W330 x H73



P/N:
060800000092000

## AX12-VT(A0)

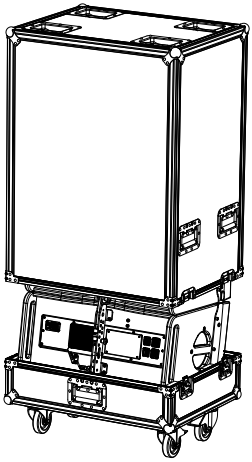
Vertical Transporter for AX12

**Highlights:**

- Road case for (3) AX12 speakers
- Truck-friendly dimensions
- Built-in stacking features for easy storage
- 4" Premium rubber casters

**N.W:**30kg | 66lb **G.W:**114kg | 253lb(Flight Case for (3) AX12)

**Package size**(mm):W600 x H1260 x D723(Height with casters)



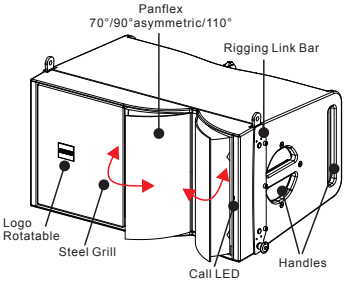
P/N:
060800000088000

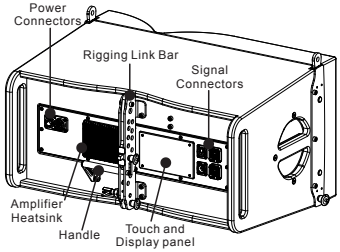
## Product Introduction

### AX12

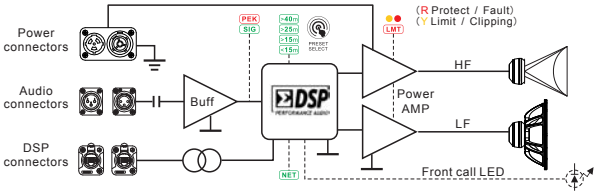
**Highlights:**

- Compact and lightweight design | N.W:28.5kg | 5 handles
- Preset curvature | Auto-lock
- User-defined left and right shapes



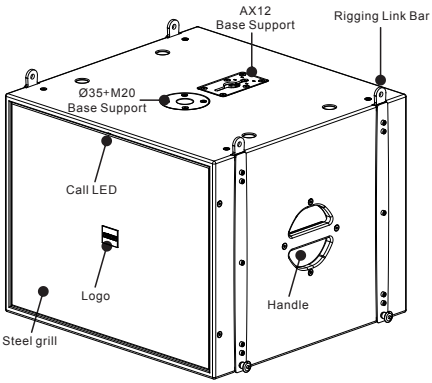

Topology diagram

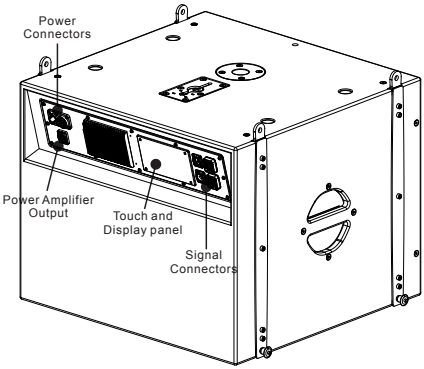



### AX18

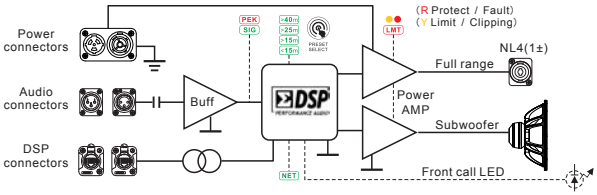
**Highlights:**

- Compact and lightweight design | N.W:42.5kg | 2 handles
- Flexible Array Combination | Cardioid array
- Multi-functional Application




Topology diagram

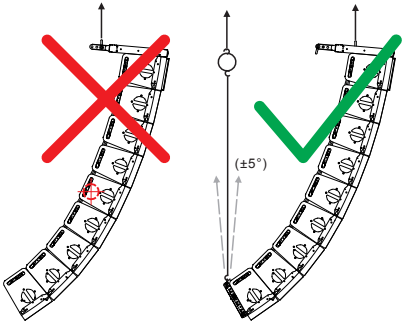


## Rigging Usage

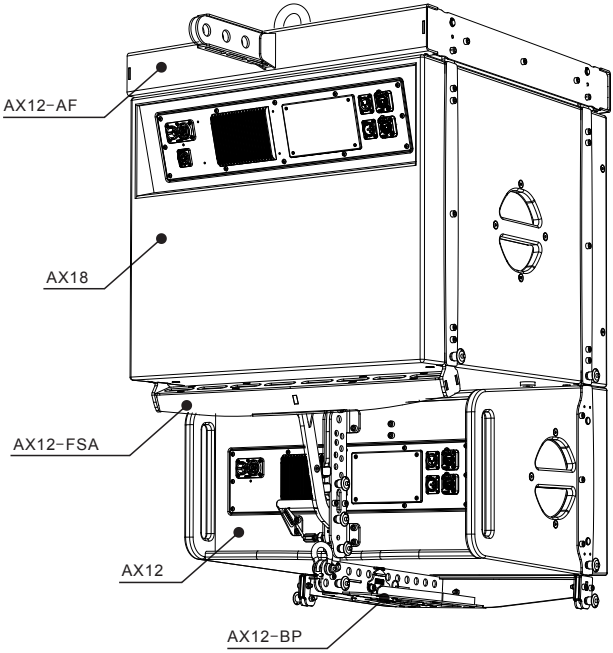
Describe the application locations of various accessories as shown in the figure.

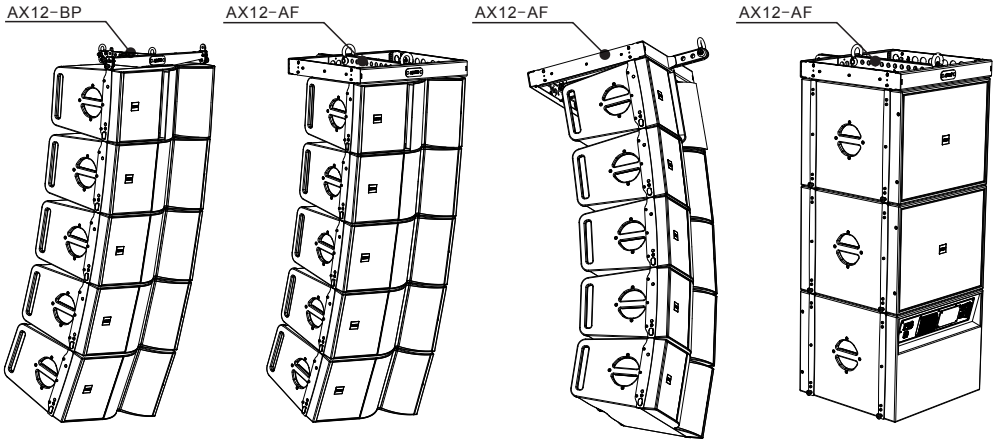
AX12-BP is used as a pullback frame.
This depends on the center of gravity of the actual installed speaker array. If it is confirmed that the center of gravity has shifted beyond the main beam of the AX12-AF hanger, it must be installed, and additional lifting points must be added outside the hanger for load-bearing purposes.

!This is a safety issue.
It is not permissible to use it in a makeshift manner or operate it in violation of regulations!




When applying at a large inclination angle,
install AX12-BP at the bottom of the array,
And set up a lifting point vertically above its fulcrum (±5°)。



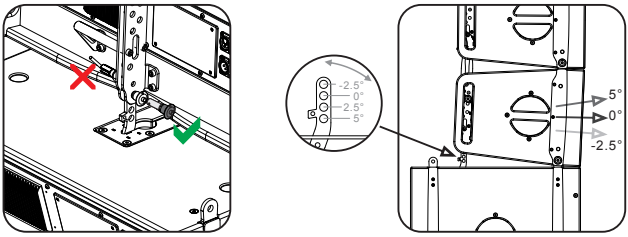



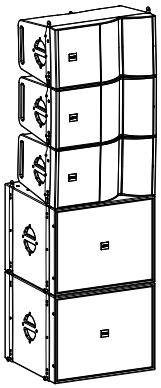
## Use Cases

### Stacked installation example

#### ►AX12+AX18 Ground stacking

This combination can be directly connected without the need for additional accessory brackets.
However, it is important to note that the support point must use a Ø10 pin,
and be careful not to mistakenly use the spring-loaded pin for automatic locking!

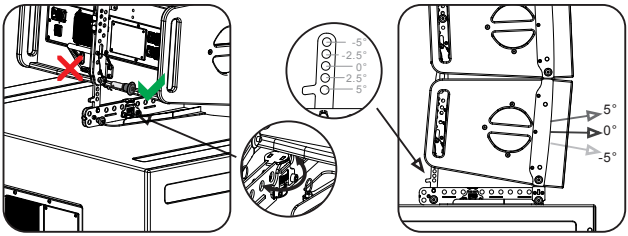


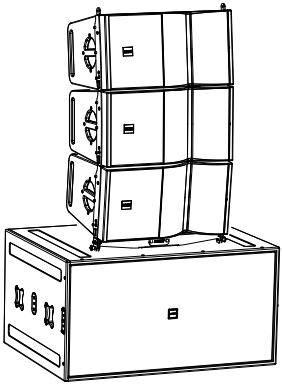



AX18 has a bracket specifically designed for stacking AX12, offering four inclination options (-2.5°, 0°, 2.5°, 5°)

#### ►AX12+BX28 Ground stacking

AX12-BP is a base plate specifically designed for this purpose.
However, it is important to note that the support point must use a Ø10 pin,
and be careful not to mistakenly use an automatically locking spring pin!

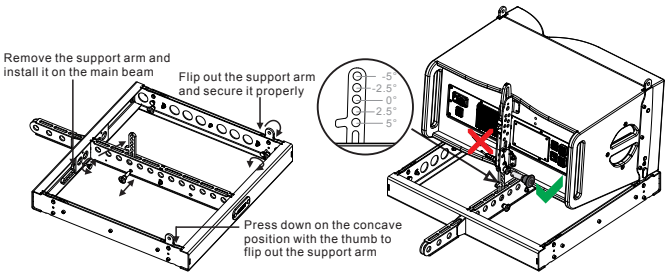


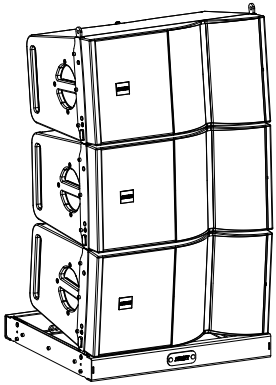



AX12-BP provides a hand-tight bolt that can secure the bracket onto BX28,
Provide options for five tilt angles: (-5° to 2.5°; 0°; 2.5°; 5°)

#### ►AX12 is stacked on other platforms

It is recommended to use the AX12-AF stacking bracket.
AX12-AF is a support rod specifically designed for this purpose.
However, it is important to note that the support point must use a Ø10 pin,
and be careful not to mistakenly use an automatically locking spring pin!

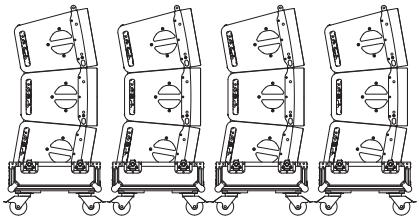


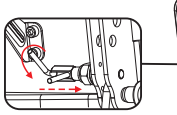



The support arm offers five inclination options: (-5° to 2.5°, 0°, 2.5°, 5°)

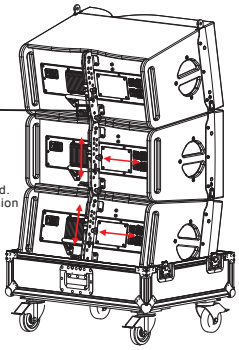
**For example, 12 AX12s are installed in a common J-shaped array.**
**This combination requires the use of AX12-AF, and it is recommended to use two suspension points.**

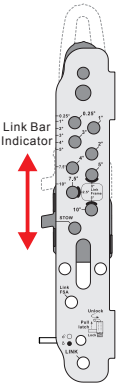
①Prepare equipment, cables, frames, etc
There is also a construction guide for the curvature angle of each speaker



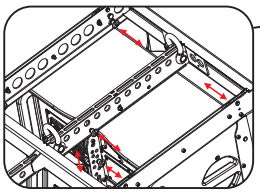


Move the automatic locking pin to the position to be locked. While waiting for the suspension to be in place, the pin will automatically lock the curvature angle.

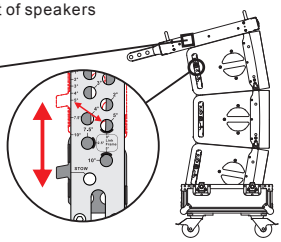





②Install AX12-AF on top of the first set of speakers



Insert the link bar arm and lock it with pins



The angle between the first speaker and the frame is set to 0°

Speaker curvature angle table

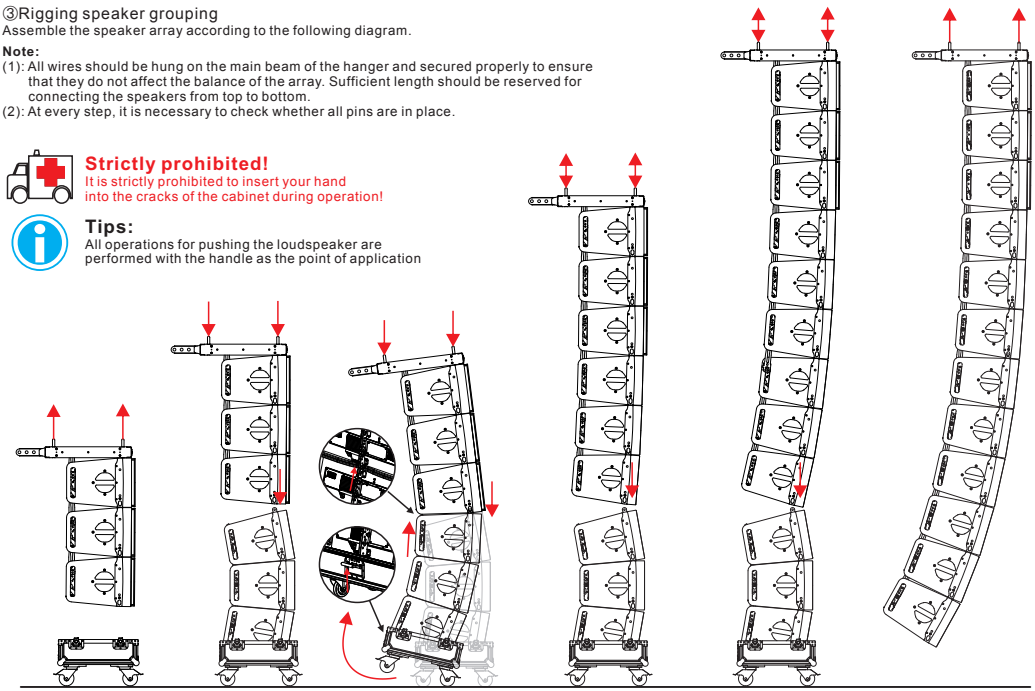
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 0.25° | 0.25° | 1° | 1° | 2° | 2° | 3° | 3° | 4° | 5° | 7.5° |
| Group 1 | | | Group 2 | | | Group 3 | | | Group 4 | | |

③Rigging speaker grouping
Assemble the speaker array according to the following diagram.

**Note:**
(1): All wires should be hung on the main beam of the hanger and secured properly to ensure that they do not affect the balance of the array. Sufficient length should be reserved for connecting the speakers from top to bottom.
(2): At every step, it is necessary to check whether all pins are in place.

**Strictly prohibited!**
It is strictly prohibited to insert your hand into the cracks of the cabinet during operation!

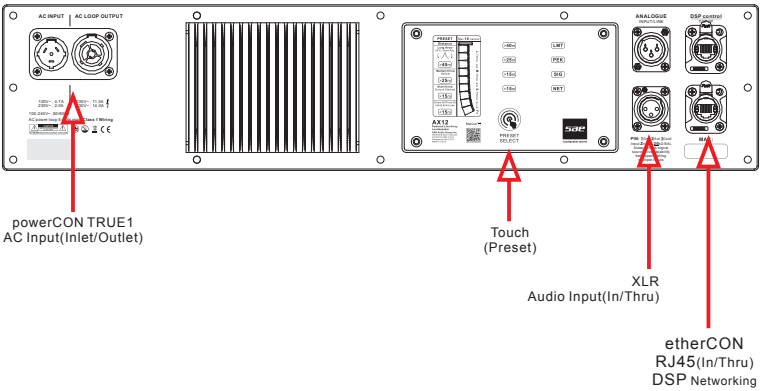
**Tips:**
All operations for pushing the loudspeaker are performed with the handle as the point of application



## Line-source Amplifier Panel

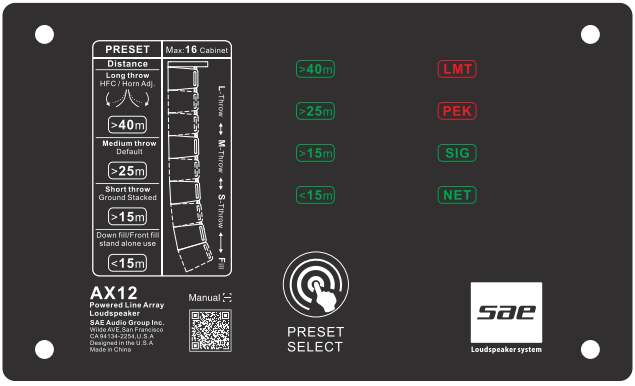
**The AX12 drive module panel features a hole-free design, so all sockets are rated at IP65.**

- ▶ The panel power outlet is a powerCon TRUE1 (straight-through)
- ▶ The audio outlets are two XLRs (straight-through)
- ▶ The network outlets include two etherCONs with RJ45 cascading (loop)The touch panel controls DSP preset selection.
- ▶ Built-in scenes can be called for quick setup without requiring computer online debugging.
- ▶ The indicator lights provide clear guidance.



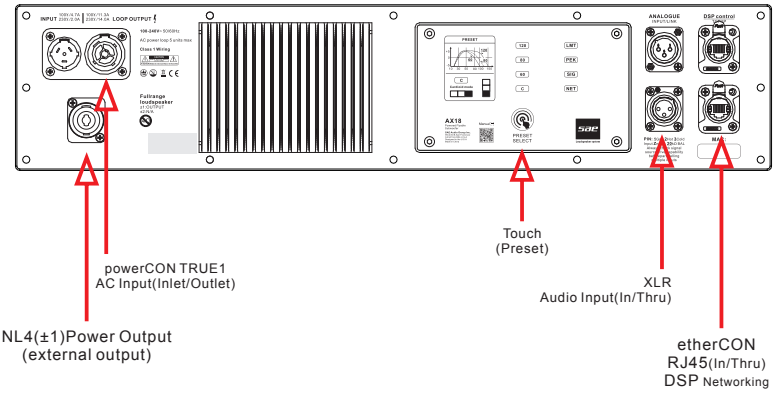

Touch panel: When in use, simply touch the finger icon to select preset scenes.

| | | | |
|---|---|---|---|
| >40m | Long-distance area of >40 meters | LMT | Power Amplifier clipping limt / self-protection |
| >25m | Medium distance area of 25~40 meters | PEK | Signal peak |
| >15m | Medium distance area of 15~25 meters | SIG | Music signal indicator |
| <15m | Short distance area of <15 meters | NET | DSP TCP/IP Networking |



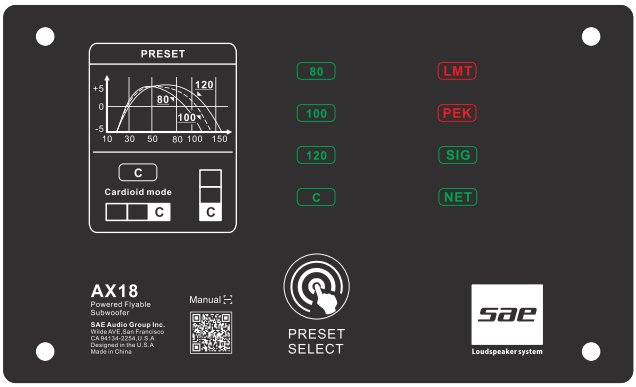
**The AX18 drive module panel features a hole-free design, so all sockets are rated at IP65.**

- ▶ The panel power outlet is a powerCon TRUE1 (straight-through)
- ▶ The audio outlets are two XLRs (straight-through)
- ▶ The network outlets include two etherCONs with RJ45 cascading (loop)The touch panel controls DSP preset selection.
- ▶ Built-in scenes can be called for quick setup without requiring computer online debugging.
- ▶ The indicator lights provide clear guidance.
- ▶ Power Output(external output).




Touch panel: When in use, simply touch the finger icon to select preset scenes.

| | | | |
|---|---|---|---|
| 80 | 80Hz Low pass | LMT | Power Amplifier clipping limt / self-protection |
| 100 | 100Hz Low pass | PEK | Signal peak |
| 120 | 120Hz Low pass | SIG | Music signal indicator |
| C | Cardioid Array | NET | DSP TCP/IP Networking |



www.saeaudio.com

Manufacturer:Sae Audio Co.,LTD.
Sae reserves the right to make changes in specifications and products without prior notice.