IDea EVO20-M Line Array System

IDea EVO20-M Line Array System User Manual

Contents

IDea EVO20-M Line Array System

Two-Way Active Professional Line Array System Sistema de Line Array profesional de 2 vías

OVERVIEW

EVO20-M professional 2-way active dual 10” Line Array system delivers excellent sonic performance and reliability in a convenient and cost-effective package that meets all audio industry professional standards, featuring high-quality European transducers and electronic components, European safety regulations and certifications, superior construction and finish and maximum ease of configuration, set-up and operation.
EVO20-M is an enhanced version of the high-value EVO20 Line Array system that features improved limiter DSP settings, greater directivity control (with added horizontal waveguide flanges and MF passive filter), optimized internal acoustic material treatment and extended LF response.
Conceived as main system in portable professional sound reinforcement or touring applications, EVO20-M can also be the ideal choice for High SPL installations for Club sound, sport arenas or performance venues.

Features

- 1.2 KW Class D Amplifier/DSP Module (by Powersoft)
- Premium European High Efficiency custom IDEA transducers
- Proprietary IDEA High-Q 8-slot line-array waveguide with directivity control flanges
- Dedicated MF passive filter
- 10 Positions Integrated Precision rigging for stacked and flown configurations
- 2 integrated handles
- Rugged and durable 15 mm Birch Plywood construction and finish
- 1.5 mm Aquaforce coated steel grille with internal protective foam
- Durable Aquaforce paint, available in standard textured black or white, optional RAL colors (on demand)
- Dedicated transport /storage/rigging accessories and Flying frame
- Matching subwoofer configurations with BASSO36-A (2×18”)
- Matching subwoofer configurations with BASSO21-A (1×21”)

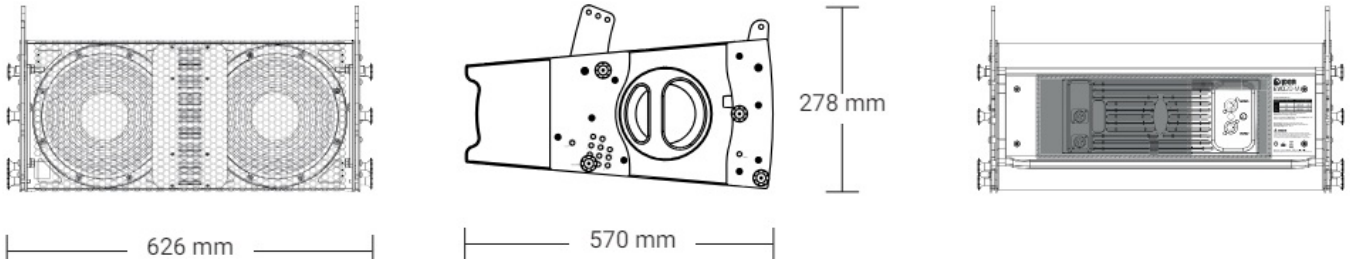
Applications

- High SPL A/V portable sound reinforcement
- FOH for medium size performance venues and clubs
- Main system for Regional Touring and Rental Companies
- Down-Fill or ancillary system for larger PA/ Line Array system

Technical data

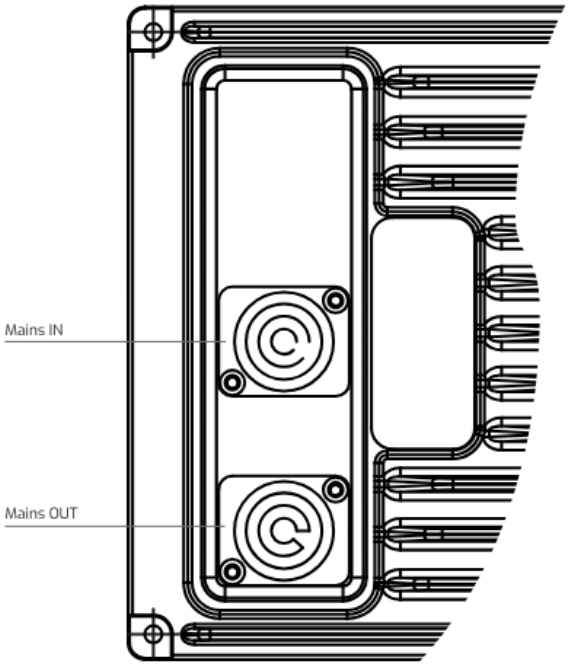
Enclosure design	10˚ Trapezoidal
LF Transducers	2 × 10” High performance woofers
HF Transducers	1 × compresion driver, 1.4″ horn throat diameter, 75 mm (3 in) voice coil
Class D Amp Continuous Power	1.2 kW
DSP	24bit @ 48kHz AD/DA – 4 selectable presets: Preset1: 4-6 array elements Preset2: 6-8 array elements Preset3: 8-12 array elements Preset4: 12-16 array el ements
Aiming/Prediction Softwa re	EASE FOCUS
SPL (Continuous/Peak)	127/133 dB SPL
Frequency Range (-10 dB)	66 – 20000 Hz
Frequency Range (-3 dB)	88 – 17000 Hz
Coverage	90˚ Horizontal
Audio Signal Connectors **Input** **Output**	XLR XLR
AC Connectors	2 x Neutrik® PowerCON
Power Supply	Universal, regulated switch mode
Nominal Power Requirem ents	100 – 240 V 50-60 Hz
Current Consumption	1.3 A
Cabinet Construction	15 mm Birch Plywood
Grille	1.5 mm perforated weatherised steel with protective foam
Finish	Durable **IDEA** proprietary Aquaforce High Resistance paint coating process
Rigging Hardware	High-resistance, coated steel integrated 4-point rigging hardware 10 angulation p oints (0˚-10˚ internal splay angles in 1˚steps)
Dimensions (W×H×D)	626 × 278 × 570 mm
Weight	37 kg
Handles	2 integrated handles
Accessories	Power module rain cover (RC-EV20,included) Rigging frame (RF-**EVO**20) Rigging frame stack (RF-**EVO**20-STK) Transport cart (CRT-**EVO**20)

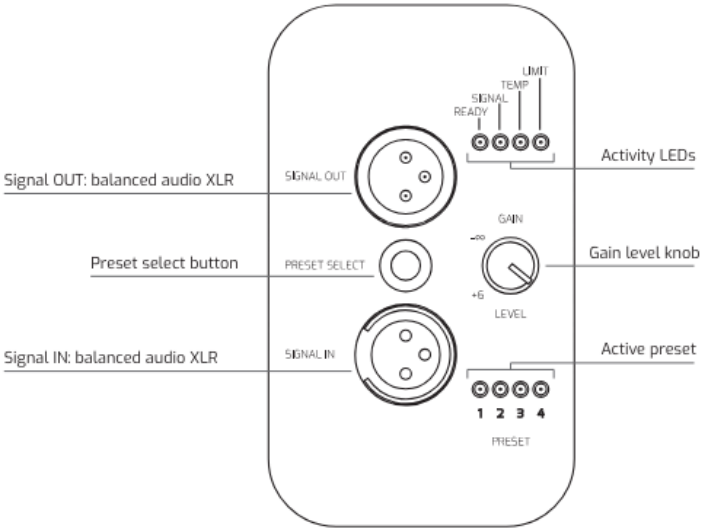
Technical Drawings



Dsp/amp power module

EVO20-M is a Bi-Amp 1000 W Class-D self-powered loudspeaker equipped with PowerCON 32A Mains connectors and XLR ba-lanced audio signal connectors allowing for a simple, straight-forward power and audio linking of the array elements





Lelft Pannel

- **Mains IN:**
  32A PowerCON Mains IN connector.
- **Mains OUT:**
  32A PowerCON Mains OUT connector.

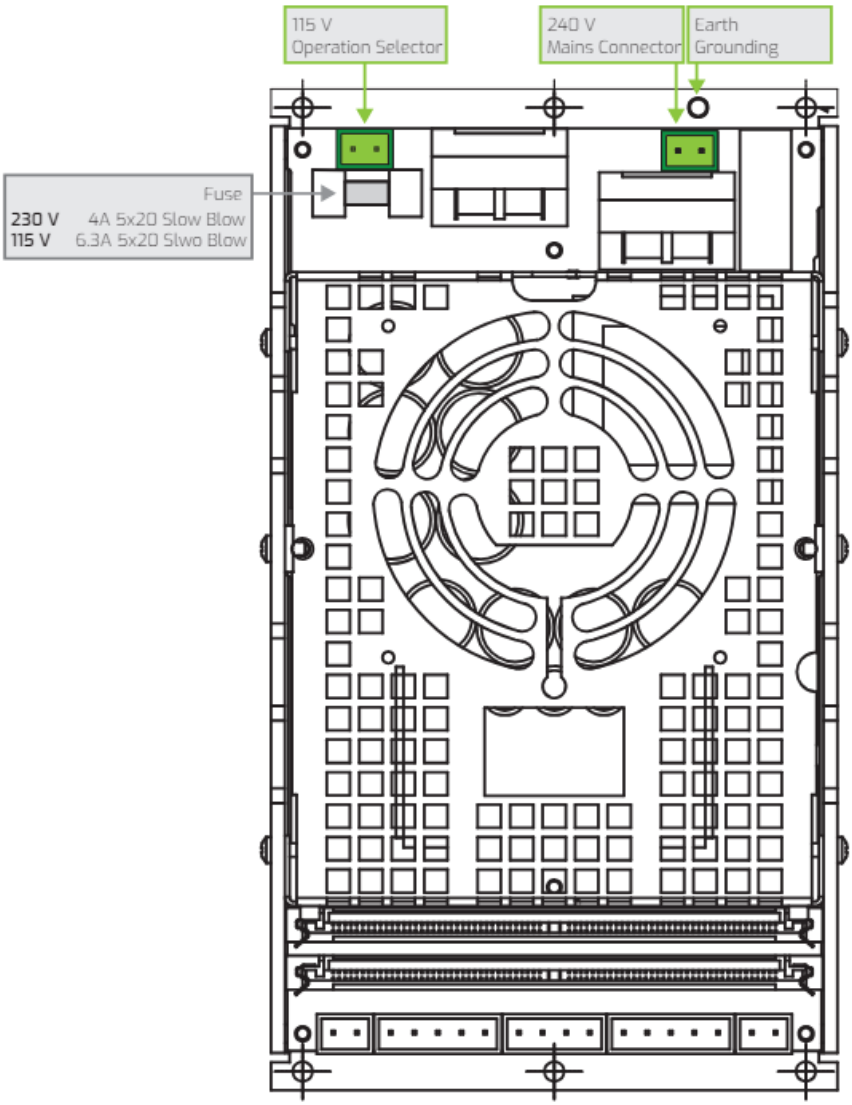
Right Pannel

- **Signal IN:**
  Balanced audio XLR Input connector
- **Signal OUT:**
  Balanced audio XLR Output connector
- **Preset Select:**
  Click to toggle between 4 pre-loaded presets
- **Activity LEDs:**
  Visual indicators of amp module status

- **Ready:**
  The unit is active and ready
- **Signal:**
  Audio signal activity
- **Temp:**
  Balanced audio XLR Output connector
- **Limit:**
  Limiter is actvie
- **Gain Level:**
  Amp gain level knob with 40 intermediate jumps
- **Active Preset:**
  Visual indicator for active preset number

Voltage selection

- EVO20-M’s integrated power module features two different Mains Input selectors to operate at 240 V and 115 V.
- Although all EVO20-M systems are served ready to operate at the right voltage of the region it is shipped to from the factory, when setting up a system for the first time, we strongly recommend to check if the power module Mains connector matches your AC power supply voltage.
- To do so, it is only required to remove the heat sink screws and check which position the Mains Input is connected to, as shown in the diagram.



System Configurations

Introductory guidelines on Line-Array system configurations
Line-Arrays work because of the interactions of the different transducers in each array element. Some of these interactions result in negative effects, such as distortion and phase is-sues, the benefits of energy summing and a degree of vertical directivity control prevail as the advantages of using Line-Array systems.
The IDEA DSP Line-Array settings aim to facilitate a simplified approach to the Line- Array setup and deployment and focus on two fundamental factors that affect the behavior of the array in terms of directivity and frequency response linearity.

Array Length
The first factor is Array Length, which influences the range of frequencies in which the linearity of the response of the array is affected by the total distance between the axis of all the trans-ducers aligned in the vertical plane.
This is specially noticeable in the LF, as the LF woofers, due to their proximity in relation the their band pass, sum acoustic energy particularly efficiently, and require a compensation of the amplitude of the LF signal from the crossover point with the subwoofers up to different frequency points depending on the number of elements present in the array.
For this purpose the Settings are grouped in four Array lengths/Element counts: 4 -6, 6-8, 8-12 and 12-16.

Array Curvature
The second key element for the DSP setting of the Arrays is the curvature of the array. Many different combination of angles can be set by the operators of a Line-Array, optimizing the desired vertical coverage required for the application.
Users can use EASE FOCUS as a guide to find the ideal internal splay angles between array elements.
Note that the sum of the internal splay angles and the nominal vertical coverage angles of the array do not

correlate directly and their relation varies with the array length. (see examples)

IDEA DSP settings
IDEA DSP settings operate in 3 categories of averaged Array curvature:

- MINIMUM (<30° Recommended Internal Splay Angulation Sum)
- MEDIUM (30-60° Recommended Internal Splay Angulation Sum)
- MAXIMUM (>60° Recommended Internal Splay Angulation Sum)

EASE FOCUS Prediction Software
EVO20-M Ease Focus GLL files are available for download from the product's page as well as from the Downloads repository section.

MINIMUM ARRAY CURVATURE

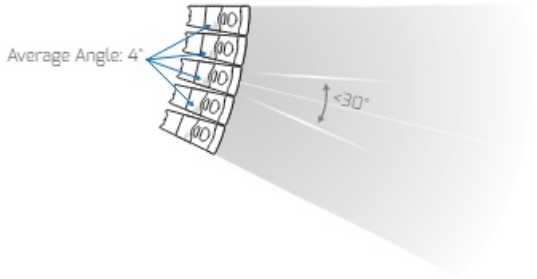
<30° Recommended Internal Splay Angulation Sum
Low internal splay angles result in more "straight" arrays that concentrate more HF energy on the acoustical axis of the Array, achieving greater HF energy over greater distances (improving "throw") but narrowing down the usable vertical coverage.

These settings are available for TEOd9 and other External Stan-dalone DSP processors for IDEA Active Line-Array systems like EVO20-M, and included in IDEA System-Amplifier DSP Solutions.

4-6 × EVO20-M elements

The example image shows a 4˚×5-elements configuration

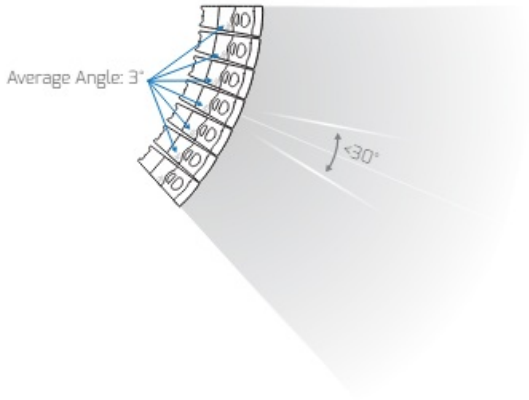
[Total splay angle sum: 16˚]



6-8 × EVO20-M elements

The example image shows a 3˚×7-elements configuration

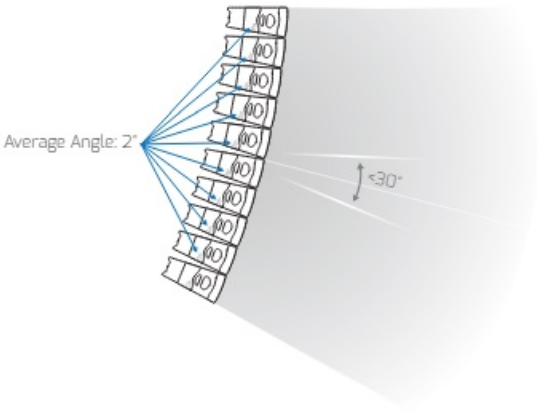
[Total splay angle sum: 18˚]



8-12 × EVO20-M elements

The example image shows a 2˚×10-elements configuration

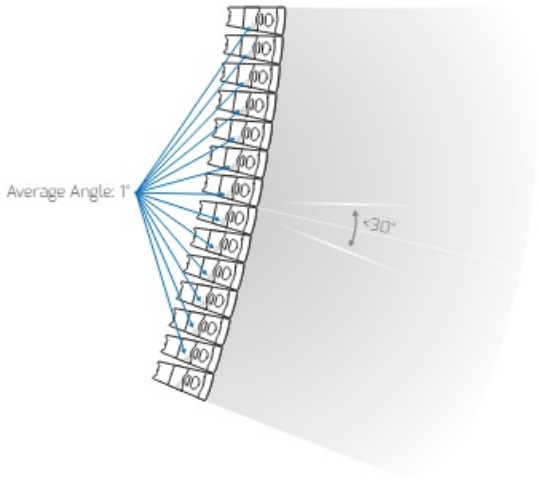
[Total splay angle sum: 18˚]



12-16 × EVO20-M elements

The example image shows a 1˚×14-elements configuration

[Total splay angle sum: 13˚]



MEDIUM ARRAY CURVATURE

30°- 60° Recommended Internal Splay Angulation Sum

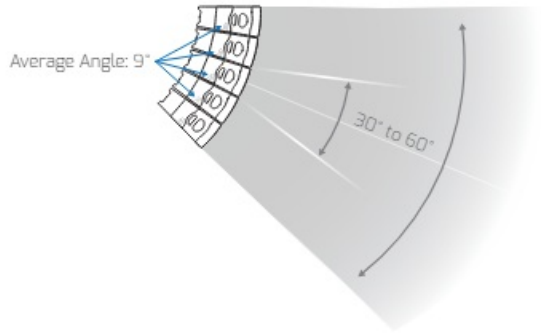
This is the most useful level of vertical coverage for the most typical flown Line-Array applications and it will ensure balanced coverage and SPL within the listening area for the majority of the applications.

These presets are found as standard in the EVO20-M integrated DSP and can be directly selected from the back pannel interface as shown in Section of this document.

4-6 × EVO20-M elements

The example image shows a 9˚×5-elements configuration

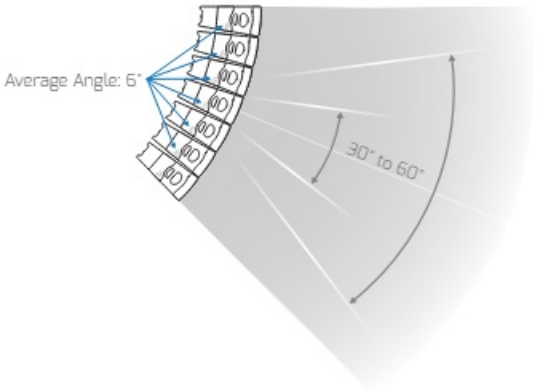
[Total splay angle sum: 36˚]



6-8 × EVO20-M elements

The example image shows a 6˚×7-elements configuration

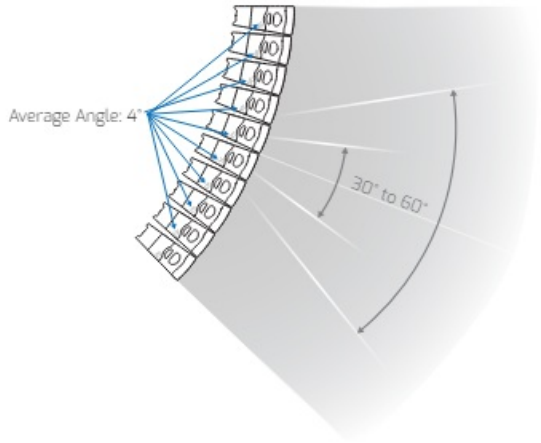
[Total splay angle sum: 36˚]



8-12 × EVO20-M elements

The example image shows a 4˚×10-elements configuration

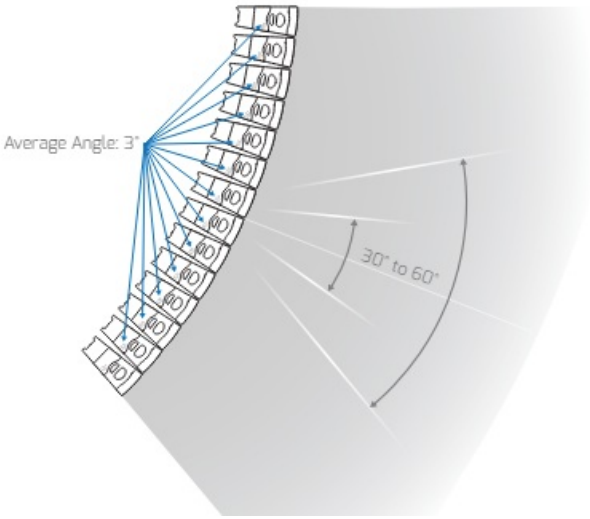
[Total splay angle sum: 36˚]



12-16 × EVO20-M elements

The example image shows a 3˚×14-elements configuration

[Total splay angle sum: 39˚]



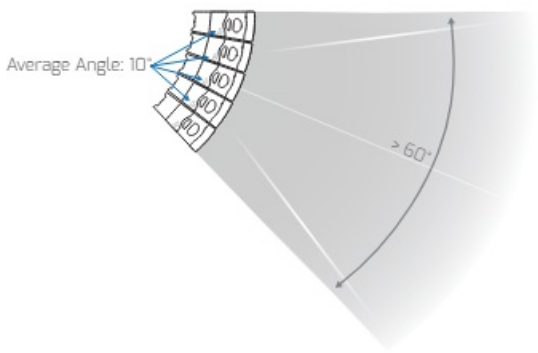
MAXIMUM ARRAY CURVATURE

60° Recommended Internal Splay Angulation Sum
Larger internal splay angle counts result in greater curvatures, with wider vertical coverage patterns and lesser summing of the HF energy. This kind of angling is found in Arrays with a small box count or in larger arrays that are ground-stacked or installed close to grandstands in Sport arenas.
These settings are available for TEOd9 and other External Stan-dalone DSP processors for IDEA Active Line-Array systems like EVO20-M, and included in IDEA System-Amplifier DSP Solutions.

4-6 × EVO20-M elements

The example image shows a 10°×5-elements configuration

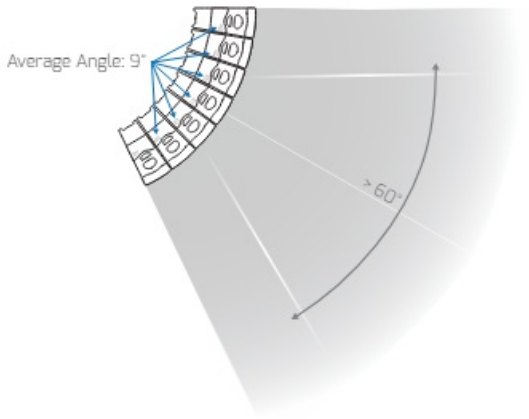
[Total splay angle sum: 40°]



6-8 × EVO20-M elements

The example image shows a 9°×7-elements configuration

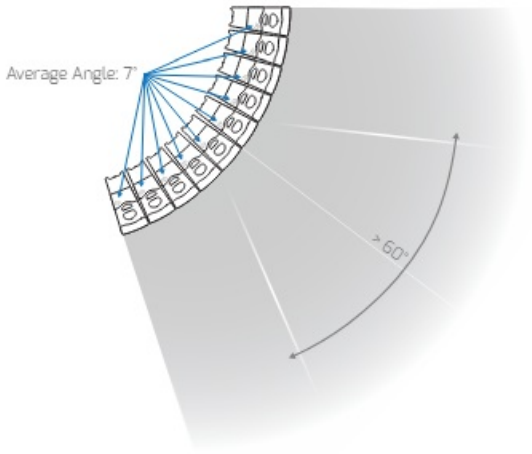
[Total splay angle sum: 54°]



8-12 × EVO20-M elements

The example image shows a 7°×10-elements configuration

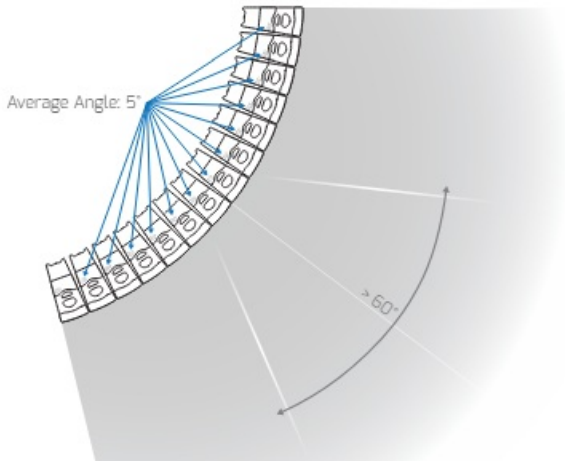
[Total splay angle sum: 63°]



12-16 × EVO20-M elements

The example image shows a 5°×14-elements configuration

[Total splay angle sum: 65°]

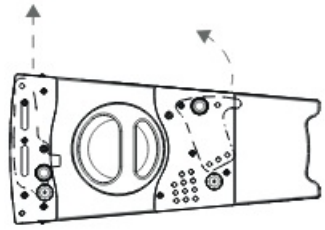


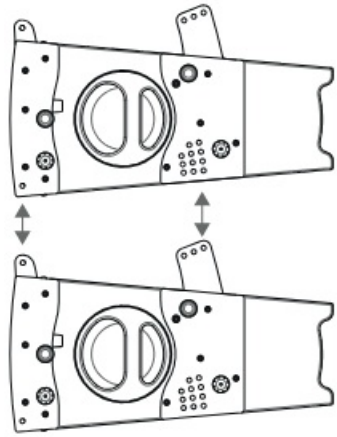
Rigging And Installation

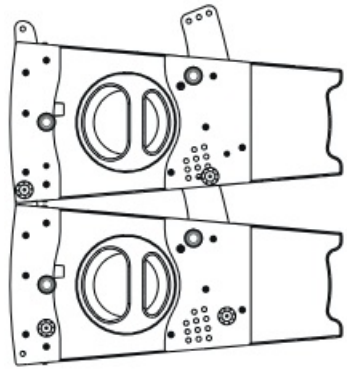
EVO20-M Line-Array elements feature an integrated steel rigging hardware especially designed for ease of set-up and use. Up to 10 internal angulation options in 1° steps are available and dedicated stow positions for a precise and quick deployment of the array.
The following are the basics for array element linking.

BASIC GUIDELINES

1. To proceed setting-up the array, release and unlock the front and back links of the lowest element in the system.
2. Position and lock the front and back links of the following element in the array using the spare pins stored in the dedicated hole labelled as Stow.
3. Finally lock the desired position with the dedicated pin stored in the Groundstack/Stow hole. Repeat the operation for the any other EVO20-M element in the system.

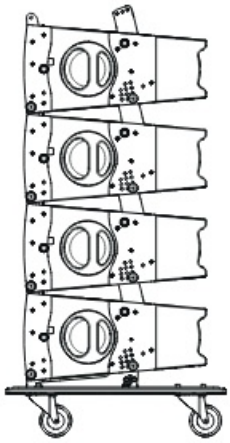




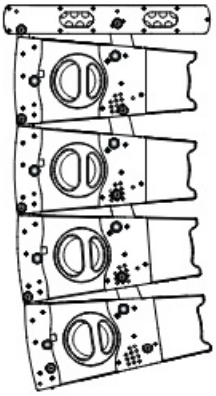


RECOMMENDED SYSTEM SUSPENSION PROCEDURE

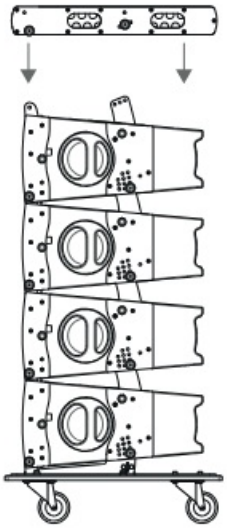
1
Set the transport cart with the **EVO**20-M elements in the desired position and lock the wheel for a secure setup.



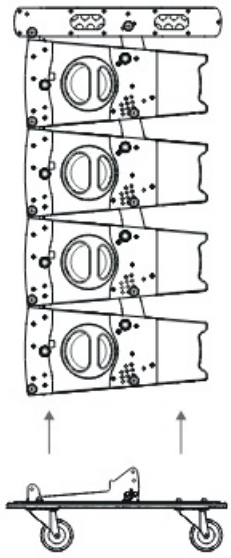
4
Set internal splay angulation according the desired setup



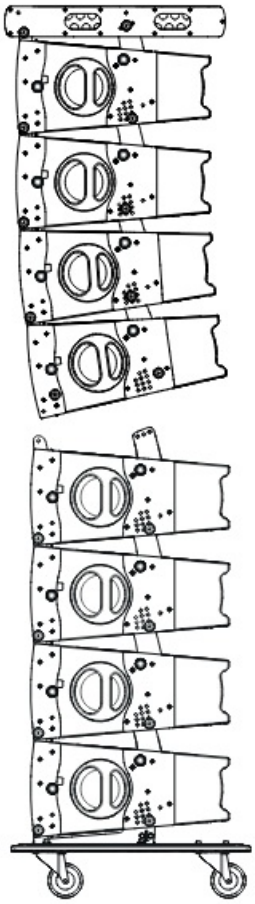
2
If the **EVO**20-M rigging frame structure is not already linked, proceed to lock the four rigging points of the frame to the integrated rigging structure of the top **EVO**20-M element.



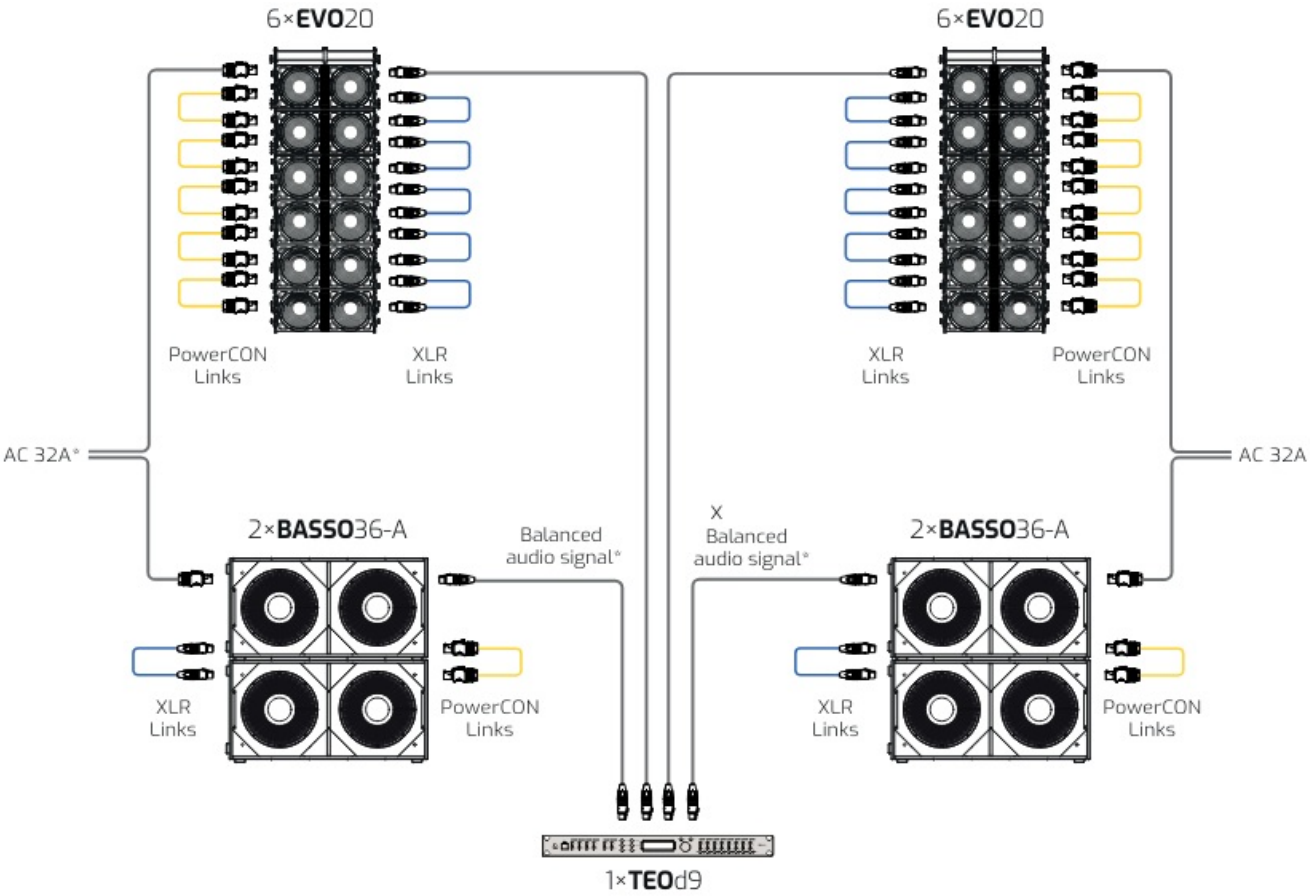
3
Unlock the bottom **EVO**20-M element from the transport cart and proceed to suspend the system up to a comfortable position for next step.

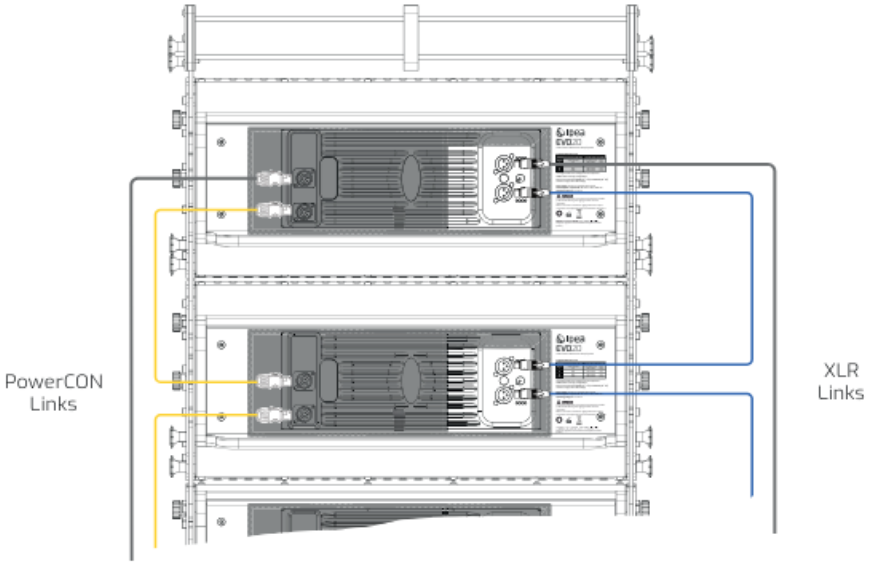


5
Elevate the four top elements to a level where the next **EVO**20-M elements in the transport cart naturally allaign the already set-up array and repeat the above steps.



Configuration Example





Warnings On Safety Guidelines

- Read this document thoroughly, follow all safety warnings and keep it for future reference.
- The exclamation mark inside a triangle indicates that whatever repairing and component replacement operations must be done by qualified and authorized personnel.
- No user serviceable parts inside.
- Only use accessories tested and approved by IDEA and supplied by the manufacturer or an authorized dealer.
- Installations, rigging and suspension operations must be done by qualified personnel.
- This is a Class I device. Do not remove Mains connector ground.

- Only use accessories specified by IDEA, complying with maximum loads specifications and following local safety regulations.
- Read the specifications and connection instructions before proceeding to connect the system and use only cabling supplied or recommended by IDEA. Connection of the system should be done by qualified personnel.
- Professional sound reinforcement systems can deliver high SPL levels that may result in hearing damage. Do not stand close to the system while in use.
- Loudspeaker produce magnetic field even while they are not in use or even when disconnected. Do not place or expose loudspeakers to any device that is sensitive to magnetic fields such as television monitors or data storage magnetic material.
- Keep the equipment in the safe working temperature range [0º-45º] at all times.
- Disconnect the equipment during lightning storms and when it is not to be used for a long time.
- Do not expose this device to rain or moisture.
- 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.
- Clean with a wet cloth. Do not use solvent-based cleaners.
- Regularly check the loudspeaker housings and accessories for visible signs of wear and tear, and replace them when necessary.
- Refer all servicing to qualified service personnel.
- This symbol on the product indicates that this product should not be treated as household waste. Follow local regula-tion for recycling of electronic devices.
- IDEA declines any responsibility from misuse that may result in malfunction or damage of the equipment.

Warranty

- All IDEA products are guaranteed against any manufacturing defect for a period of 5 years from date of purchase for acousti-cal parts and 2 years from date of purchase for electronic devices.
- The guarantee excludes damage from incorrect use of the product.
- Any guarantee repair, replacement and servicing must be exclusively done by the factory or any of authorized service centres.
- Do not open or intend to repair the product; otherwise servicing and replacement will not be applicable for guarantee repair.
- Return the damaged unit, at shipper’s risk and freight prepaid, to the nearest service centre with a copy of the purchase invoice in order to claim guarantee service or replacement.

Declaration Of Conformity

I MAS D Electroacústica S.L. , Pol. A Trabe 19-20 15350 CEDEIRA (Galicia – Spain), declares that EVO20-M complies with the following EU Directives:

- RoHS (2002/95/CE) Restriction of Hazardous Substances
- LVD (2006/95/CE) Low Voltage Directive
- EMC (2004/108/CE) Electro-Magnetic Compatibility
- WEEE (2002/96/CE) Waste of Electric and Electronic Equipment
- EN 60065: 2002 Audio, video and similar electronic apparatus. Safety requirements.

- EN 55103-1: 1996 Electromagnetic compatibility: Emission
- EN 55103-2: 1996 Electromagnetic compatibility: Immunity

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Documents / Resources

	**IDea EVO20-M Line Array System** [pdf] User Manual EVO20-M Line Array System, EVO20-M, Line Array System, Array System, System

References

- **User Manual**