



VERTICAL ARRAY SOLUTIONS





# THE ART OF SOUND

## 2002

PROEL debuts in the field of professional concert systems and starts researching and designing intelligent and "global" solutions for sound reinforcement.

## Objectives

PROEL's aim is to achieve state-of-the-art high quality systems and to create solutions for the most demanding sound reinforcement requirements. In order to achieve this, PROEL brings onboard a group of technicians and professionals with years of experience in designing sound systems and using them in live applications.

## 2007

In a matter of a few years, a group of few brave technicians and specialists with experience in universities and laboratories, but also behind mixing desks and on concert stages, became the PROEL SRT – Sound Research Team.

## 2008

When PROEL Group acquired the renowned pro-audio brand TURBOSOUND, the resources of PROEL's R&D lab, and particularly those of its SRT, merged with those of the lab in Partridge Green, in the UK.

Presently, the PROEL Sound Research Team represents PROEL's spearhead in the field of professional sound reinforcement systems and includes loudspeaker system designers, analogue electronics specialists, digital system designers, integration experts and live sound engineers. Professional systems designed by the PROEL Sound Research Team feature the most advanced, state-of-the-art technologies: powerful ultra-light transducers, efficient class-D amplifiers, integrated digital signal processors, high-end analogue electronics and convenient, efficient wiring and suspension systems. All these features contribute to the achievement of intelligent sound reinforcement solutions that provide excellent musical sound, high quality, ease of use and versatility.

## Results

- the EDGE Series point source systems and auxiliary and monitoring systems;
- the AXIOM Series vertical array systems, conceived to combine quality sound and accurate reproduction with competitive prices and easy-to-use features.

Through these years of fast and constant growth, AXIOM and EDGE professional speaker systems have been used to support great artists in a very wide range of applications, always ensuring the success of the event and collecting recognition and praise from professionals in the field.





# THE SOUND OUT FRONT

In recent years, sound reinforcement with line array systems has been a huge success. Such systems have clearly proven their value with an audio performance that overshadows the so-called traditional systems, the only ones available in the past. This is possible thanks to a new approach to sound reinforcement in very large spaces (with high sound pressure levels) that brought a revolution to the design of professional sound systems. The associated technological research on single components and advanced design and simulation techniques has also had a positive effect on sound systems such as "Point Source Arrays".

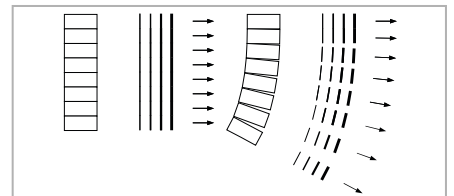
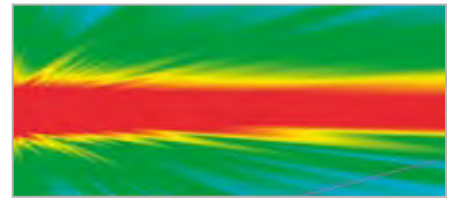
The AXIOM project was created when a careful analysis of the professional market revealed that one of its most urgent requests was for highly versatile and scalable products. Following the advances made with the development of the EDGE modular array project, PROEL TOURING has created several solutions that will satisfy the most demanding clientele in the widest range of applications. The products of the AXIOM Series are the result of the many years of experience and research PROEL has put into professional sound reinforcement, striving always to obtain excellent performance, proudly made in Italy.

Introducing the AXIOM Series speaker systems, PROEL TOURING prefers to define them as Vertical Arrays rather than Line Arrays. A careful practical analysis of the actual employment conditions of so-called Line Arrays shows that most applications require a general curvature of the array, sometimes even a remarkable one. This consideration has to be taken into account when designing a Vertical Array tailored to the actual needs of an application. For the AXIOM Series, the wave guide system employed for high frequencies has been designed and optimised for this purpose. Thus, rather than worry about hypothetical straight arrays that only find application under a few very specific conditions, the designers chose to maximise the performance of the system when the array configuration needs to be curvilinear.

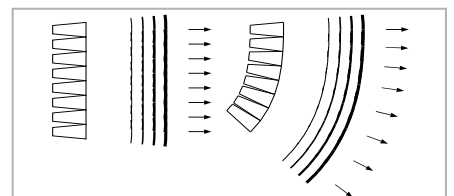
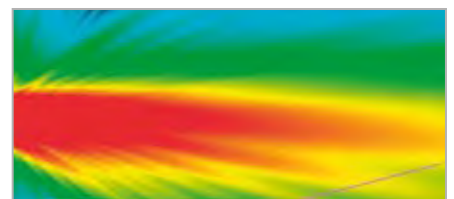
We know that the directivity on the vertical axis of an array of sources depends on the shape of the array. The success of modular vertical arrays is due to the fact that you can get the very directive behaviour you are looking for thanks to the mechanical configuration of the array of modules. As you can easily verify, a perfectly straight array creates a very narrow central lobe which, with a few very specific exceptions, is almost useless in practical applications. The AXIOM Systems are based on the implementation of wave guides that have been optimised to work in arrays of modules with progressive curvatures, as this kind of application is how modular vertical arrays are almost always actually used. Speaking of which, we need to debunk two myths associated with vertical array systems (commonly known as "line arrays"): the first being that they are always the best solution for any sound reinforcement need; and the second is that, using special devices, it is possible to generate cylindrical wave fronts (and that "real line arrays" are the only device capable of doing this).

In the attempt to divulge the operational principle of a **vertical array** system, complex concepts were very often banalized so much that some have gone as far as stating that vertical array systems can generate cylindrical wave fronts, with great profit in terms of sound propagation. We now need to state clearly that a sound source of finite dimensions, such as an array, cannot generate a cylindrical wave front, except for a very limited frequency range. Furthermore, a hypothetical perfectly cylindrical emission from each module of the array is to be desired only when the array is mounted perfectly straight.

If we were to analyse the emission according to the vertical axis of a perfectly straight array we would immediately remark that its practical applications would be rather limited, as in most cases the array needs to cover a deep audience area which is below the centre of the array itself, rather than project a sound beam the furthest away possible.



The wave front curvature cannot and should not be useless: in practical applications that require a curved array it is logical to have curved wave fronts. In most practical applications with a curved array, if the emission of each single element is flat, it creates energy vacuums in the polar response, resulting in an unstable vertical coverage.





### Coaxial Driver on wave guide

AX3210P systems feature a coaxial driver with two membranes, each of them dedicated to a different frequency range. If compared with traditional single membrane drivers, this solution offers better damping at the highest frequencies, and an improvement in the vocal range reproduction resulting in an exceptionally soft sonority for a professional component with such a sound pressure capability. The two membranes in the driver are piloted through a purpose-designed, passive filter. The coaxial driver is mounted on a wave guide which allows correct wave front curvature and correct directivity with respect to the vertical axis, minimizing distortion effects and vibration.

### High Performance Woofer

All woofers adopted for AXIOM Systems have been especially designed according to state-of-the-art technology for moving coil transducers.

- **ISV (Interleaved Sandwich Voice) Coil:** a coil wound around its former both inside and outside allows better dissipation of heat and, consequently, power compression reduction.
- **SDR/DDR (Single and Double Demodulating Rings):** demodulating rings minimize modulation effects due to  $L_e(x, i)$  inductance and, as a result, harmonic and inter-modulation distortion are reduced through the entire frequency spectrum reproduced, with special benefits for the normal reproduction of the mid-range and for the over-excursion control at the extreme low end.
- **DSS (Double Silicon Spider):** a double spider improves excursion control and temporal stability of the component features even while reproducing explosive peaks.

The angular coverage of the **AXIOM** Series systems at mid and mid-high frequencies is optimised thanks to the combination of acoustic design and peculiar alignment techniques in the crossover frequency neighbourhood. The technique known as **ACID** (Acoustical Coverage Improvement Device) is based on the employment of acoustic filters which optimise the horizontal coverage of the systems and avoid the natural shrinkage of the beam-width when frequencies produced by mid-low range frequency loudspeakers increase. The alignment chosen for crossovers such as the "Delay Compensated Constant Voltage" allows the optimisation of off-axis response stability and significantly reduces lobing at crossover frequency, while it makes for a homogeneous phase response with a more contained total phase shift as opposed to that obtained with conventional alignments. Thus, the response to the impulse is much more coherent.

### EASE FOCUS Simulation Software

In order to support both system design and everyday use of the **AXIOM** Systems, models for Ease Focus simulation software have been created, based on high resolution measurements of the system elements.

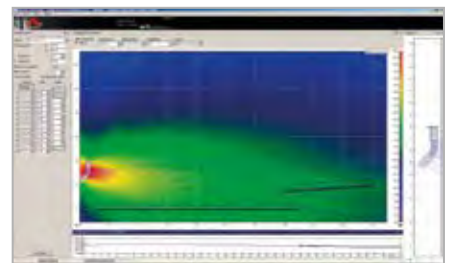
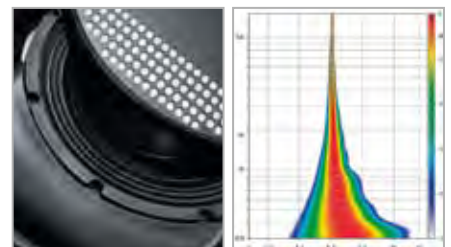
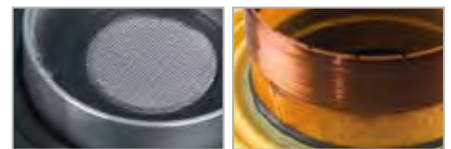
**EASE Focus** is a software that allows the two-dimensional simulation of acoustic sources, particularly of vertical arrays. The simulation considers the direct sound field, as a result of the complex sum of the individual sources in the array. Its function is to provide the user with the possibility to simulate the optimal configuration for the array in the most realistic manner possible. This way, any possible problem is faced and solved before mounting the array, which results in a swift and efficient acoustic and mechanical set up of the system.

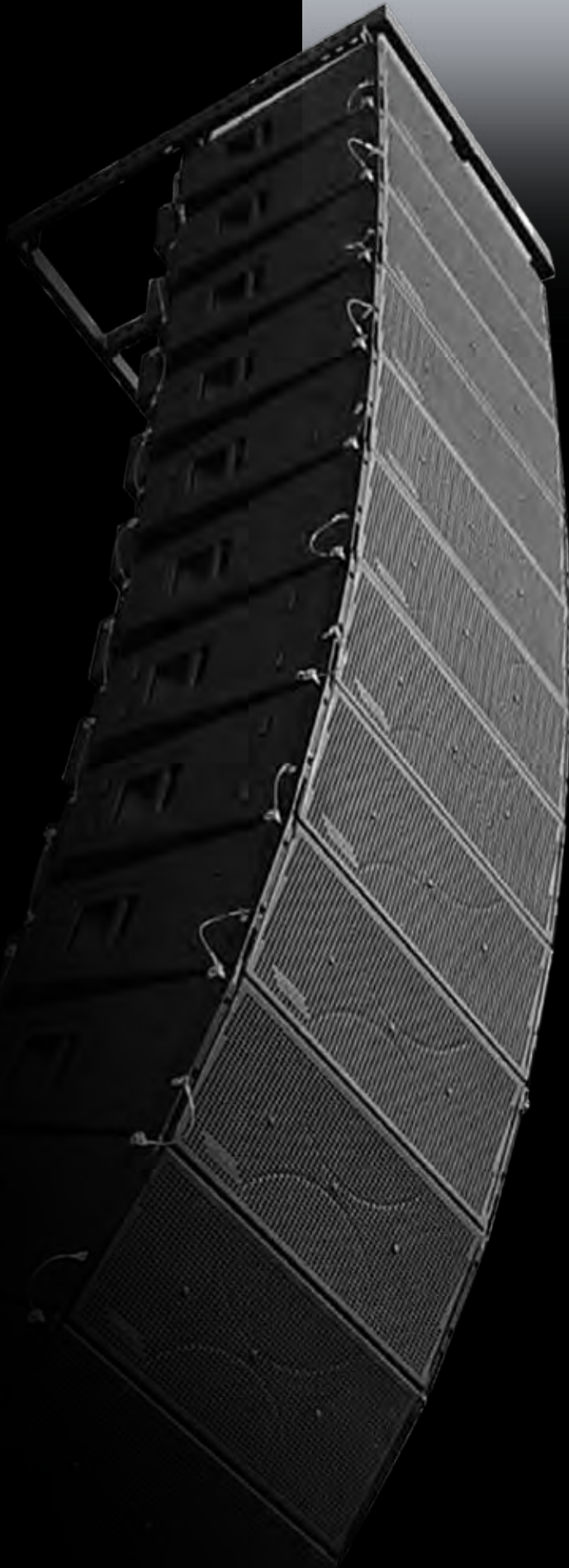
### Audio Suite Remote Control Software

Audio Suite is the new remote control software for Powersoft amplifiers, and particularly for those in the K Series fitted with optional KDSP and KAESOP cards. Audio Suite follows two working modes: offline and online. When working offline, the user can configure the system before connecting to a network. Switching to the online mode, it is possible either to send or to recall configurations by connecting to the network. Ethernet protocol ensures a swift data exchange between every amplifier and the computer.

### Qualità in dimensioni compatte.

Il driver a compressione che è utilizzato sull'AX2265P è dotato di magneti in neodimio, gola da 1", ed è equipaggiato da una particolare membrana in titanio che gli permette di lavorare bene già a partire da 1.3 kHz malgrado le dimensioni ridotte. E' stato progettato per essere utilizzato in situazioni in cui è obbligatoria la massima qualità del suono e la nuova tromba è stata realizzata in alluminio per ottenere le migliori prestazioni sia sotto il punto di vista termico che meccanico.





The **Axiom** Series flagship system comprises the **AX3210P** module and the flyable subwoofer **AX1118SP**. Axiom systems have been designed for maximum scalability, but their sturdy steel mechanics for integrated suspension were developed in order to create even large-scale flown systems, yielding excellent performance and sufficient SPL for sound reinforcement in large venues.





## AX3210P



- VeCAM Module for high power progressive vertical arrays
- Acoustic Coverage Improvement Device (A.C.I.D. Technology)
- Integrated suspension and transportation systems

Model **AX3210P** is a 3-way, bi-amplifiable module for vertical arrays designed for live concerts or for permanent installations. It features two 10" woofers with neodymium magnets, ISV coils and SDR (Single Demodulation Ring) and DDS. Its compression driver is a 2-way coaxial component and features a neodymium magnet and a 2" throat. It uses a 4" annular diaphragm for the mid-range frequencies reproduction and a 2" diaphragm for the high frequencies. Both diaphragms are driven by a single input through a passive filter, which also features independent protection devices against overload of the two sections.

The average nominal angular dispersion on the horizontal axis is 110 (-6 dB), while the vertical dispersion depends on the composition of the array. Every single element, and particularly the high-frequency wave guide, has been designed to combine at its best with the rest of the system, especially when marked curvatures are needed. The precise directivity control in the high range reduces destructive interference to a minimum. The waveguide, manufactured using a special toughened and damped material, minimizes transfer losses while maintaining the efficiency of

the driver, especially at very high frequencies. The flying and transportation system is completely integrated with the exception of its basic element, the flying bar KPTAX3210. This bar can fly up to 24 AX3210P elements with a security factor of 7:1.

## AX1118SP



- 18" neodymium woofer 5.5" Voice Coil with ISV, DDR and DSS
- Exponential vents
- Integrated suspension and transportation systems

Model **AX1118SP** is a direct radiation bass-reflex flying subwoofer. AX1118SP complements AX3210P whenever extended bass frequency reproduction is needed for creating a fully suspended array (model EDGE 121SP from the EDGE Series would be used as ground sub). The 18" woofer used is a very special speaker that features a 5.5" ISV coil, a neodymium magnet optimised for an exceptional linear excursion, a die cast basket with double ventilation and Double Demodulating Rings to ensure continuous excursion control and very low distortion levels.

In order to improve its performance as for efficiency, acoustic compression, maximum output level and distortion reduction, model AX1118SP features tuning ports with an innovative profile. Sharp discontinuity at the end of traditional ports causes turbulence that affects performance. PROEL TOURING R&D labs designed a port with an improved streamlined profile, which drastically reduces noises generated inside. Suspension and transportation hardware is integrated and compatible with the

AX3210P unit, thus allowing the creation of fully suspended systems with excellent performance even at the most extended low frequencies.



## EDGE SW121P



- Direct radiating bass unit
- 21" woofer with 5.3" four layer ISV voice coil,
- Highly damped enclosure

**SW121P** 21" direct radiating subwoofer completes bass response with an impressive excursion control and high power handling capability. SW121P is designed to work at 1500 W (AES) continuous power and can handle peaks 6 dB higher than that (up to 6000 W) without damage. Because of its heavy-duty DSS (Double Silicon Spider) suspension system, its double demodulating ring (DDR) and its over-damped housing, SW121P can provide a tremendous amount of defined and controlled low frequency energy. An amplified version is also available (**SW121A**).

## ACCESSORIES

The AXIOM Series accessory line includes caster-board AXSKATE, cover 93COVAX310, and, on request, padded cover COVERAX3210 for model AX3210P. Flight cases for transporting one (CP038E04) or two (CP038A04) AX3210P are also available. Flying bar KPTAX3210, thanks to its feet 95AXMPDN, makes for an easy and safe installation of a stacked array.

Whenever you need to create small suspended arrays in permanent installations (up to 8 AX3210P) you can use the compact version of the flying bar, KPTAX3210S. The KPTAX3222I coupling bar permits the suspension of compact array elements underneath arrays of larger elements. In the PROEL Trussing catalogue you will find towers to lift AXIOM Systems rapidly and safely.

The AXIOM Systems are preset to suspend arrays of variable shapes and dimensions thanks to a suspension system designed to be easy-to-use, flexible and safe. You will find all the information on how to fly an AXIOM system in the guide provided with the user's manual.



CP038E04



AXSKATES18



CP038A04



93COVAX310

AXSKATE

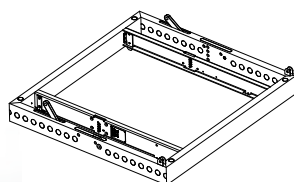


KPTAX3210S



KPTAX3210

95AXMPDN



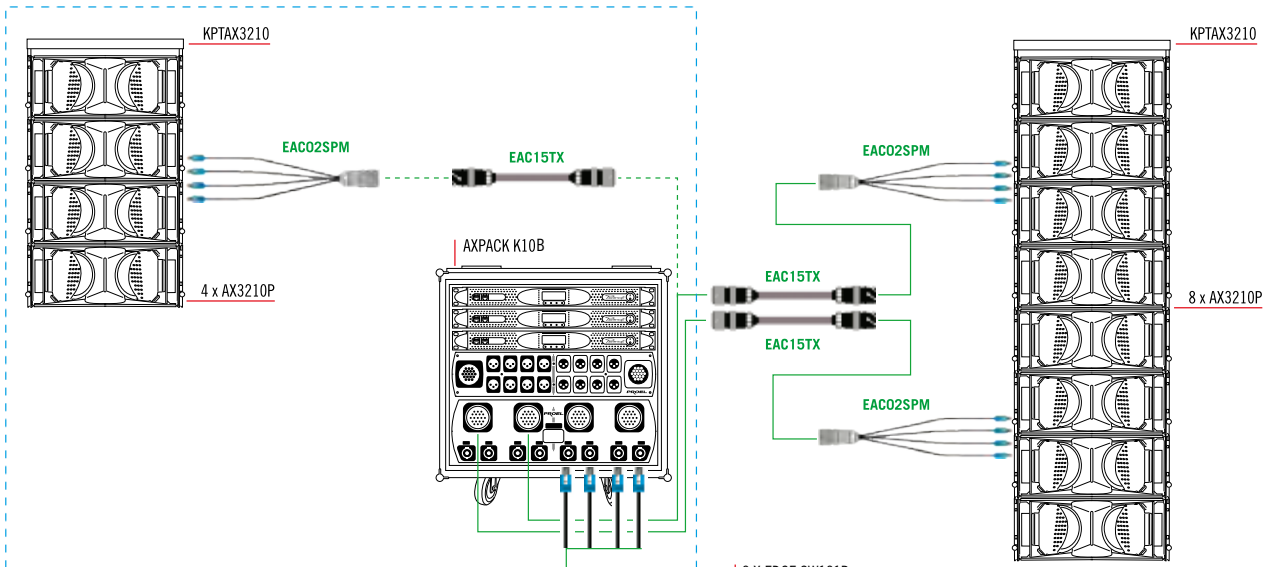
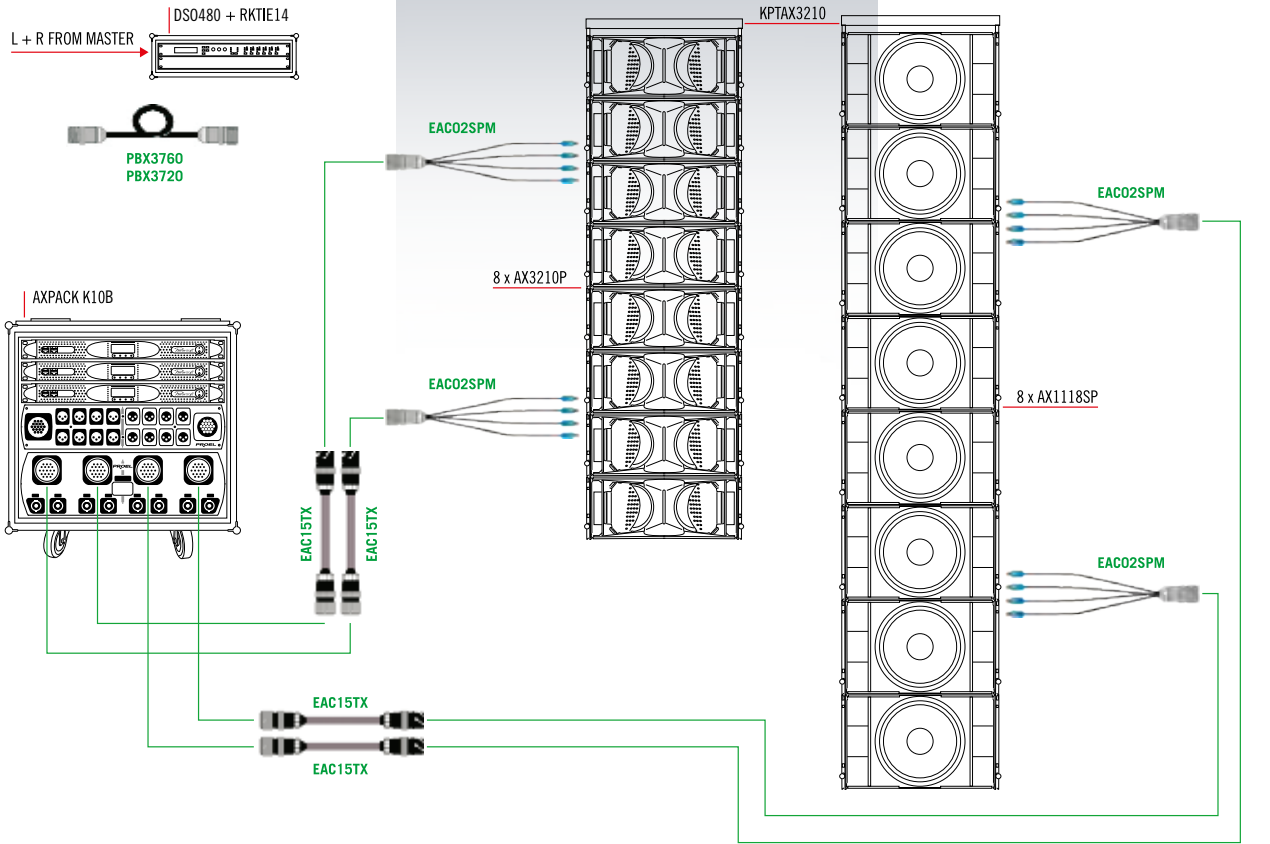
KPTAX3222I

System	AX3210P	AX1118SP	EDGE SW121P
System Type	3-way full-range vertical array element - bi-amp	direct radiation bass-reflex subwoofer	direct radiation bass-reflex subwoofer
Frequency Response	75 Hz - 20 kHz	32 Hz - 80 Hz	32 Hz - 80 Hz
Coverage Angle H. (-6 dB)	110 average		
Coverage Angle V. (-6 dB)	depending on array size		
Directivity Index (DI)	depending on array size		
Maximum Peak Output	131 dB @ 1 m	131 dB @ 1 m	131 dB @ 1 m
Crossover Frequency		from 80 Hz to 160 Hz	from 80 Hz to 100 Hz
Signal Processing	Proel DS0480	Proel DS0480	Proel DS0480
Low - Mid Frequency Device	2 x 10" neodymium woofer - 3" voice coil	18" neodymium woofer - 4" voice coil	21" neodymium woofer - 5.3" voice coil
Nominal Impedance	8	8	8
Power Rating	800 W AES 1600 W program	800 W AES 1600 W program	1500 W AES 3000 W program
Sensitivity	99 dB SPL (2.83 V, 1 m)	98 dB SPL (2.83 V, 1 m)	96 dB SPL (2.83 V, 1 m)
High Frequency Device	2" coaxial neodymium compression driver - horn loaded	-	-
Nominal Impedance	16	-	-
Power Rating	150 W AES 300 W program	-	-
Sensitivity	110 dB SPL (4 V, 1 m)	-	-
Construction	trapezoidal (12°) 15 mm birch plywood internally reinforced with paint finish	15 mm birch plywood internally reinforced with paint finish	15/18 mm birch plywood internally reinforced with paint finish
Flying System	built in suspension system	built in suspension system	-
Dimensions (WxHxD)	80 x 33 x 66.5 cm	80 x 48 x 66.5 cm	58.4 x 76.5 x 81.0 cm
Weight	57.5 kg - 126.7 lb	59 kg - 130 lb	59 kg - 130 lb
Weight With Skate	51.5 kg - 113.5 lb	67 kg - 147.7 lb	-





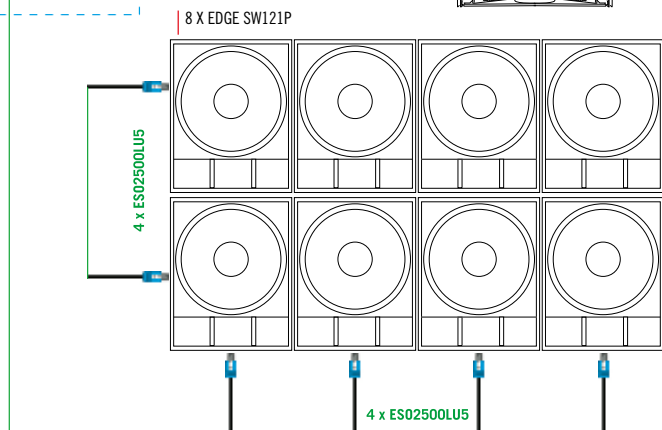
# SET-UP EXAMPLE



## AMPLIFIER PACKS

AXPACK K10B	
PS K10	2 x 6.000 Watt 2 ohm power amplifier
PS K10	2 x 6.000 Watt 2 ohm power amplifier
PS K10	2 x 6.000 Watt 2 ohm power amplifier
SA-ML37	line signal panel MML+XLR
SA-SOX48	output panel SOCAPEX-SPEAKON
SDC32CT	power panel 32 A plug
CR510TS	10 U high quality rack case

\* only one side is depicted





When a light and compact system combines power and sound purity the result is a “high-fidelity jewel”, yielding excellent performance and ideal for critical applications such as theatre, opera, classical music and jazz. Though scalable according to need, the **AX2265P** and **AX1115SP** modules that make up the compact AXIOM System complement each other to grant an extended frequency response.



## AX2265P



- VeCAM Module for compact progressive vertical arrays
- Acoustic Coverage Improvement Device (A.C.I.D. Technology)
- Integrated suspension systems

Model **AX2265P** is a compact module for small-size Vertical Arrays that provides surprising levels of quality and sound pressure. AX2265P is a 2-way bi-amplifiable system designed for live concerts and permanent installations. It features two mid-low 6.5" loudspeakers with neodymium magnet, aluminium coil and single demodulating ring. The compression driver features a neodymium magnet, a 1" throat and is equipped with a special titanium membrane which enables it to perform well even at 1.3 kHz despite its small size.

The average nominal angular dispersion is 110 (-6dB) on the horizontal axis, whereas the vertical dispersion depends on the composition of the array. Each single element, and particularly the high frequency wave guide, has been studied to combine at their best with the rest of the system, especially when the curvature of the array is large. Precise directivity control in the high range reduces destructive interference phenomena to their minimum.

Entirely made of pressure die cast aluminium, the wave guide minimises transfer losses while maintaining the efficiency of the driver, especially at the highest frequencies. The flying and transportation system is completely integrated, with the exception of its basic element, the flying bar KPTAX2265. This bar can suspend up to 24 AX2265P elements with a security factor of 7:1.

## AX1115SP



- 15" neodymium woofer with ISV, DDR and DSS
- Exponential vents
- Integrated suspension and transportation systems

Model **AX1115SP** is a compact direct radiation bass-reflex subwoofer. It can be suspended and complements AX2265P units, both for flying and stacked arrays, yielding coherent bass frequency reproduction, thus creating a 3-way system with a remarkable performance-dimension ratio. Its 15" woofer features a neodymium magnet and an ISV coil, along with a super-reinforced cone with a rubber suspension, which guarantees great excursions without damage.

The woofer also features a die cast basket with double ventilation, Double Demodulating Rings and a Double Silicon Spider to ensure continuous excursion control and very low distortion levels. In order to improve its performance as for efficiency, acoustic compression, maximum output level and distortion reduction, model AX1115SP features tuning ports with a streamlined profile. Suspension and transportation hardware is integrated and compatible with the AX2265P

unit, thus allowing the creation of fully suspended systems with excellent performance even at the most extended bass range.





## ACCESSORIES

The accessory line for AXIOM Series compact models includes flight cases for transportation of four AX2265P (CP038D04) and of two AX1115P (CP038C04). Flying bar KPTAX2265 makes for an easy and safe installation of the array, also when stacked. In the PROEL Trussing catalogue you will find towers to lift AXIOM Systems rapidly and safely.

The AXIOM Systems are preset to suspend arrays of variable shapes and dimensions thanks to a suspension system designed to be easy-to-use, flexible and safe. You will find all the information on how to fly an AXIOM system in the guide provided with the user's manual.



KPTAX2265



CP038D04



CP038D04

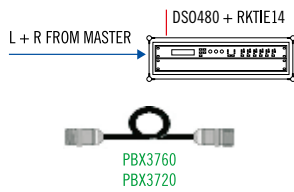
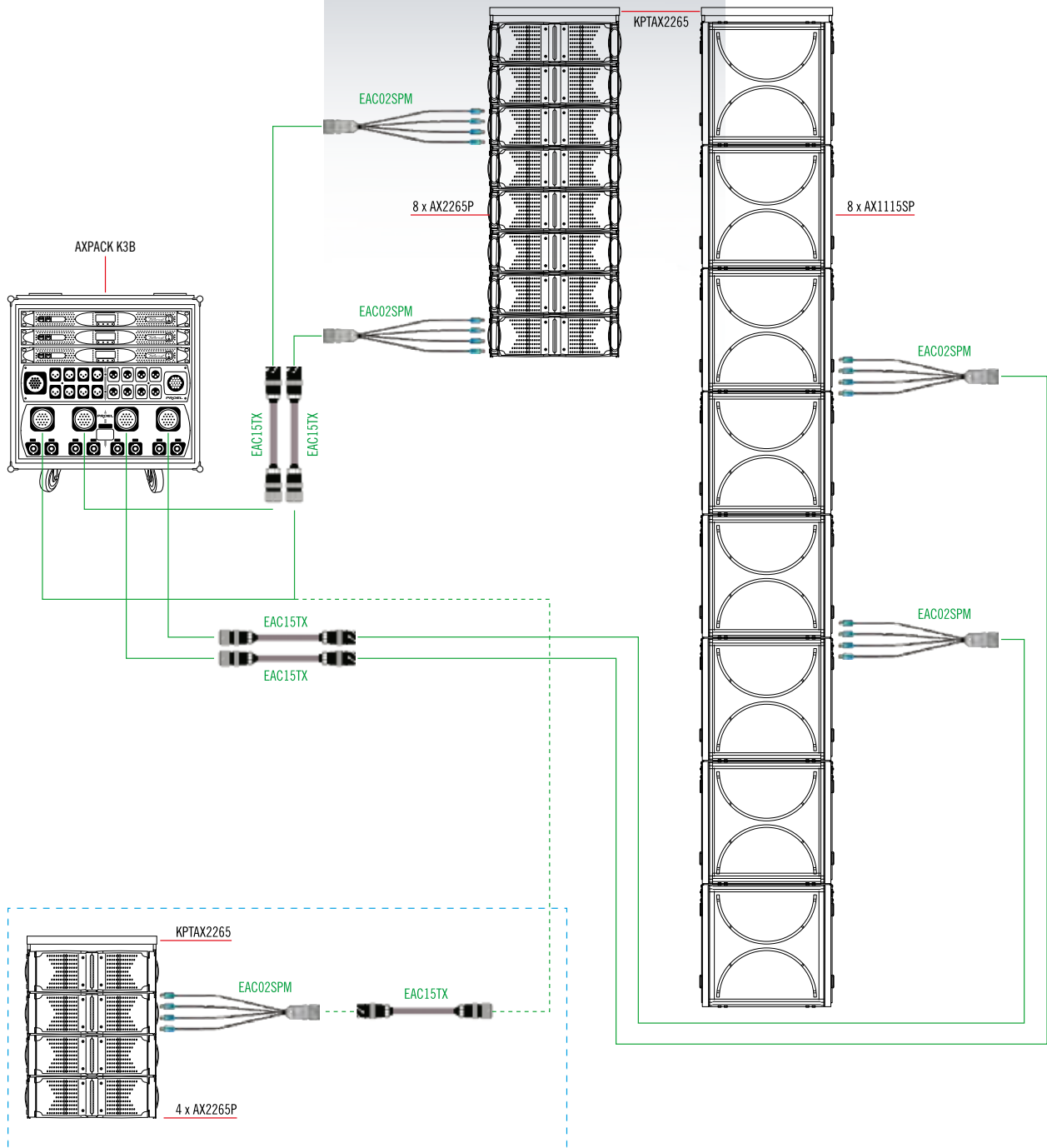


CP038C04

System	AX2265P	AX1115SP
System Type	2-way vertical array element - bi-amp	direct radiation bass-reflex subwoofer
Frequency Response	125 Hz - 18 kHz	40 Hz - 160 Hz
Coverage Angle H. (-6 dB)	110 average	
Coverage Angle V. (-6 dB)	depending on array size	
Directivity Index (DI)	depending on array size	
Maximum Peak Output	129 dB @ 1 m	130 dB @ 1 m
Crossover Frequency		from 80 Hz to 160 Hz
Signal Processing	Proel DS0480	Proel DS0480
Transducer		
Low - Mid Frequency Device	2 x 6.5" neodymium woofer - 2" voice coil	15" neodymium woofer - 4" voice coil
Nominal Impedance	8	8
Power Rating	500 W AES 1000 W program	1000 W AES 2000 W program
Sensitivity	99 dB SPL ( 2.83 V, 1 m)	97 dB SPL ( 2.83 V, 1 m)
High Frequency Device	1" neodymium compression driver - horn loaded	-
Nominal Impedance	16	-
Power Rating	80 W AES 160 W program	-
Sensitivity	110 dB SPL (4 V, 1 m)	-
Mechanical Data		
Construction	trapezoidal (12°) 15 mm birch plywood internally reinforced with paint finish	15 mm birch plywood internally reinforced with paint finish
Flying System	built in suspension system	built in suspension system
Dimensions (WxHxD)	58.5 x 19 x 46 cm	58.5 x 55 x 54 cm
Weight	18.5 kg - 40.8 lb	43 kg - 94.8 lb



# SET-UP EXAMPLE



## AMPLIFIER PACKS

AXPACK K3B	
PS K3	2 x 2.800 Watt 2 ohm power amplifier
PS K3	2 x 2.800 Watt 2 ohm power amplifier
PS K3	2 x 2.800 Watt 2 ohm power amplifier
SA-ML37	line signal panel ML+XLR
SA-SOX48	output panel SOCAPEX-SPEAKON
SDC32CT	power panel 32 A plug
CR510TS	10 U high quality rack case

\* only one side is depicted



# DSO480



With its system architecture that includes a 96 kHz sampling rate and a 4-in/8-out flexible matrix configuration, the **DSO480** is one of the most complete and sophisticated audio processor currently available. Much more than a simple crossover, the DSO480 incorporates highly advanced equalization filters (which can be configured as parametric, shelving, notch, band-pass or all-pass), a complete dynamic protection suite and a delay for the alignment of different groups of enclosures or entire other systems in distributed systems. Its AES/EBU digital inputs as standard and new high-performance converters guarantee the finest reproduction of audio signals. All of its functions can be easily regulated using its practical and ergonomic illuminated buttons and its back-lit, 2 x 24-character display. The on-board preset library can be regularly updated using the RS232 port and a user-friendly software.



The DSO480 is the ideal processor for Proel Axiom and Edge systems and is perfect for touring or permanently installed systems where complete, reliable control and high-quality audio are needed..

## DSO480

System Type	Digital System Optimiser 4 inputs / 8 outputs - 24 bit / 96 kHz with digital inputs
Inputs	4 electronically balanced
Input Impedance	> 10 kohm
CMRR	>65 dB 50 Hz – 10 kHz
Connectors	3 pin female XLR: Pin 2 Hot / Pin 3 Cold / Pin1 Ground
Outputs	8 electronically balanced
Minimum Load	600 ohm
Source Impedance	< 60 ohms
Maximum Output Level	+20 dBm into 600 ohm
Connectors	3 pin XLR male: Pin 2 Hot / Pin 3 Cold / Pin1 Ground
Frequency Response	+½ dB 20 Hz - 20 kHz (-3 dB @ 32 kHz)
Dynamic Range	>116 dB 20 Hz - 20 kHz unweighted
Distortion	< .02% @ 1 kHz, +18 dBm
Maximum Delay	650 mS
Min Step Size	0.3 µS
Input Gain	+6 dB to -40 dB in 0.1 dB steps
Output Gain	+15 dB to -40 dB in 0.1 dB steps and mute
Latency	1.5 mS (analogue in – analogue out @ 96 kHz)
Parametric Equalisation	8 per Input / 9 Sections per Output Filter Gain: +15 dB to -30 dB in 0.1 dB steps Freq. Range: 19.7 Hz – 32 kHz, 1/36 octave steps Filter Q / BW: 0.4 to 128 / 2.5 to 0.008 (Sections switched to shelving response) Low frequency: 19.2 Hz – 1 kHz High frequency: 1 kHz – 32 kHz Shelf gains: ±15 dB in 0.1 dB steps
High and Low pass Filters	Filters: 1 of each per output Freq. Range HPF: 10 Hz – 16 kHz, 1/36 octave steps Freq. Range LPF: 35 Hz – 22 kHz, 1/36 octave steps. Responses: 1st Order 6 dB/Oct. - Bessel/Butterworth/Linkwitz-Riley 12-24-48 dB/Oct. Bessel/Butterworth 18 dB/Oct.
Limiters	Program Limiter: Threshold: +22 dBu to -10 dBu Attack time: 0.3 to 90 milliseconds Release time: 2/4/8/16/32 x Attack time "D-Max" Limiter: Attack Time: -60 uS Release Time: Slow/Medium/Fast
Display	2 x 24 Character LCD
Input meter	4 x 4 point, -24 dB to digital clip
Output meter	8 x 4 point, -24 dB to +4 dB into limit
External	9 pin DEE connector (RS232)
Power	60 to 250V ±15% @ 50/60 Hz
Consumption	< 30 watts.
Dimensions (W x H x D)	44 (1U) x 482 x 300 mm excluding connectors
Weight	3.3 kg





## HPD3400PFC



**HP-D3400PFC** is the first Proel professional amplifier combining high-performance with low environmental impact. The application of a Switch-Mode Power supply featuring Power Factor Correction (PFC) and a Class D Pulse Width Modulation (PWM) output stage allows the HP-D3400PFC to reach efficiency levels as high as 90-95%. The result is a significant reduction in the energy waste associated with large installations, a noticeable reduction in operating costs and a direct benefit to the environment.

Featuring high power levels in a lightweight and compact chassis, the HP-D3400PFC is much more easy and economical to transport than conventional models, which in turn makes the unit even more environmentally friendly. Through the PFC technology on the power supply stage, the performance of the amplifier is stable even when the voltage is not. Regardless of any eventual fluctuations of the power supply, be it from mains power or from a generator, the amplifier will always be able to deliver the highest level of power: up to 1700 W per channel into 4 ohms and 3400 W into 8 ohms in bridge configuration.

The input section offers the choice between different filtering configurations (FLAT / BI-AMP / HPF), while the ergonomic and functional design, which includes removable anti-dust filter, ensures easy maintenance in all conditions of use and therefore a long durability.

### POWER DATA (THD <1% @ 1 KHz, RMS)

4 Ω	8 Ω	8 Ω BRIDGE
<b>2 x 1700 W</b>	<b>2 x 1100W</b>	<b>3400 W</b>

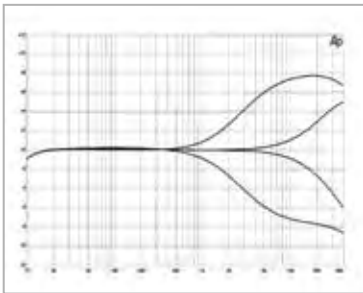
### HPD3400PFC

Channel	2
Frequency Response	5 Hz - 25 kHz
Input Sensitivity	0 dB / 40 x
Voltage Gain	40 dB/ 32 dB
Input Impedance	10 kOhm unbalanced 20 kOhm balanced
Damping Factor	> 200 @ 4 ohm
S/N Ratio (Unweighted)	> 108 dB
Input Connectors	Combo and XLR M
Output Connectors	Speakon
Cooling	variable speed DC fan
LED Indicators	protect, signal, bridge, limit
Filtering options	100 Hz selectable HPF 100 Hz 24 dB/octave BI-AMP crossover
Protections	DC, thermal, soft start, short circuit, CLIP limiter
Power Supply	230 V AC (150-264 V) 50 / 60 Hz 120 V AC (85-132 V) 50 / 60 Hz
Rated 1/8 power output	900 VA
Max Power Consumption	3450 VA
Dimensions (W x H x D)	483 x 89 x 383 mm
Weight	11 Kg (24.3 lbs)





## EZCURVE



**Ezcurve** combines new features with superior technical specifications, in order to grant a new approach to professional equalization. Ezcurve is a 1/3 octave twin-channel graphic equalizer, yielding up to  $\pm 10$ dB gain at 30 frequencies ranging from 25Hz and 20kHz. The filter design has been optimised for smooth interpolation and superior performance in this price range. 45mm faders grant excellent precision and the Ezcurve also offers exceptional specs when it comes to noise and distortion.

It also features a high frequency shelving filter, with HF trim, with variable gain and frequency control, which allow quick regulation of the high frequency response. This feature responds to the need of system realignment when, for example, it faces temperature or humidity changes in the venue.

- Outstanding analogue performance and selected audiophile components
- Variable High Frequency Trim
- Hi Pass Filter, Low Pass Filter and LED meter bar

## GATOR



**Gator** provides two channels of gating and compression, with hard and soft knee operative modes, and allows total control of signal dynamics for any application. The main features include:

- Gating circuit with selectable fast or slow release time and selectable 80- or 20dB attenuation.
- The exclusive VKF (Variable Key Filter) with tuneable HPF and LPF independently assignable to the level detector of the gate or the compressor or both. This innovative system allows the action of the compressor or gate to be fine tuned to a specific frequency range.

- Selectable hard- or soft-knee compression and a Contour filter designed to compensate high-end detail loss during compression of mixed programme material.
- RMS level detector circuitry, which perceive the signal in a more musical manner, like the human ear, and offers superior results on program and peak compression.
- 8-LED meter offering precise monitoring and showing up to 30dB variable gain reduction.

- Outstanding analogue performance and selected audiophile components
- Variable gate and compressor independently assignable, frequency conscious key filter
- Selectable Contour filter in the side-chain path to compensate for natural high frequency detail loss

EZCURVE		GATOR	
System Type	Stereo 2 x 30 band Graphic Equalizer	System Type	Stereo Gate Compressor
Frequency Response	20 Hz - 20 kHz	Frequency Response	20 Hz - 20 kHz
Input Impedance	>10 k $\Omega$	Input Impedance	>10 k $\Omega$
S/N Ratio	< -98 dB (20 Hz - 20 kHz unweighted)	S/N Ratio	< -90 dB (20 Hz - 20 kHz unweighted)
Distortion THD	< 0.01% @ 1 kHz	Distortion THD	< 0.04% @ 1 kHz
Crossover Filters	HPF: 10 Hz to 160 Hz + LPF: 18 kHz (internal selectable)	Variable key filter	HPF (30 to 4k5 Hz) LPF (400 to 30K Hz) 12 dB/oct.
EQ filters	2 x 30 1/3 octave, 25 Hz to 20 kHz. High performances LCR network, $\pm$ 10 dB	Gate	threshold range OFF to +15 dBu Maximum depth range 20 dB or 80 dB Attack time auto <500 $\mu$ s (from Maximum Depth) Release time auto, slow or fast time mode
H.F. Trim	2 kHz to 20 kHz, $\pm$ 8 dB max. @ 20 kHz	Output Gain	$\pm$ 20 dB
Output Gain	$\pm$ 10 dB	Compressor	threshold: -40 dBu to +20 dBu ratio: 1:1 to Infinity:1; 60 dB maximum compression attack time: auto program-dependent, 3 ms to 340 ms for 15 dB gain reduction
Outputs	Source Imp: <60 $\Omega$ to Min.Load: 600 $\Omega$	Outputs	Source Imp: <60 $\Omega$ to Min.Load: 600 $\Omega$
Max out.level	+23 dBm into 600 $\Omega$	Max out.level	+23 dBm into 600 $\Omega$
Connectors	input: 2 x XLR F + 1/4 (6,5 mm) TRS Phone jack electronically balanced output: 2 x XLR M + 1/4 (6,5 mm) TRS Phone jack electronically balanced	Connectors	input: 2 x XLR F + 1/4 (6,5 mm) TRS Phone jack electronically balanced output: 2 x XLR M + 1/4 (6,5 mm) TRS Phone jack electronically balanced sidechain: 2 x 1/4 (6,5 mm) TRS
Indicators	5 point bar LED - Peak, +15, +10, 0, -10 dBu	Indicators	8 GR bar LED 30, 20, 15, 10, 6, 4, 2, 1 dB 10 led (various)
Power Supply	230 V AC 50 Hz or 115 V AC 60 Hz	Power Supply	230 V AC 50 Hz or 115 V AC 60 Hz
Power consumption	< 20 W	Power consumption	< 15 W
Dimensions (WxHxD)	48.3 x 13.3 x 23.2 cm	Dimensions (WxHxD)	48.3 x 4.4 x 21 cm
Weight	5.8 kg (12.8 lb)	Weight	3.6 kg (7.9 lb)

## ACCESSORIES



### SDC32CT

19" rack 3U module wired with 1 CEE receptacle (32A 3P +N +Gnd h6), 6 Schuko outlets (16A 2P +Gnd) with 3 (2P C16) thermal circuit breakers with switches and tri-phase connection indicator.



### SASOX48

19" rack 3U module wired with 4 SOCAPEX connectors (19P) and 8 Speakon connectors for amplified signal distribution in audio systems.



### SAMIL37

19" rack 2U module with one (37P) bayonette male connector, 1 (37P) bayonette female connector, 12 XLR3M and 4 XLR3F connectors for audio signal distribution.





*Proel Group is a leading global company in the design, manufacture and distribution of audio-video and lighting systems for the world of entertainment and special events as well as for the installations sector, with 5 main companies operating in 120 countries.*

*PROEL world headquarters are located in central Italy. International markets are covered by a consolidated network of distributors, allowing the company to export its products to more than 120 countries all over the world. In 2008, alongside the current headquarters, Proel opened a state of the art 13,500 sqm dedicated automated logistics facility. Thanks to Asian partners manufacturing, Proel has been providing direct shipments from Asia to international customers, in order to provide efficient structured logistics operation.*

*The Proel Group of companies consists of:*

**Proel S.p.A.**

*Parent company with headquarters located in the province of Teramo, central Italy, is a leader in the design, manufacture and worldwide distribution of professional audio equipment, lighting systems and accessories for the world of entertainment, special events and installations.*

**Turbosound Ltd.**

*Award-winning designer and manufacturer of professional sound reinforcement loudspeakers located in the UK. Turbosound produces loudspeakers for the live entertainment and fixed sound system installation markets.*

**EVR Media S.p.A.**

*The company operates in both fixed and temporary installations of professional video systems for the world of TV and events. In addition, EVR Media manages schedules and plans for video systems for major users. Located in Udine, north-eastern Italy.*

**Eurosell S.p.A.**

*A leader in the distribution of video and led technology, for the rental market, integrated systems and fixed installations. Based in Udine, north-eastern Italy.*

**Proel America LLC**

*Based in Miami U.S.A., the company is the distribution, support and logistics office for Proel's products for North, Central and South America.*

*PROEL is particularly committed to Research & Development in terms of product innovation (increasing product ranges and optimizing product performance) and process innovation (new technologies and new testing techniques).*

*R&D activities are generally carried out in three facilities, two in Italy and one in Great Britain, provided with state of the art data collection, measurement and monitoring equipment.*

*Its highly-focused R&D projects allow the company to optimize production cycles and develop new solutions.*

*Proel has established its current market position as the result of investments in Research and Development, direct products design, maximum and ongoing commitment to quality and innovation, care for the pre/post sales services, and a strong and consolidated distribution network in Italy and worldwide.*



Worldwide Headquarters



Logistic Park



R&D Department

**PROEL**  
TECHNOLOGY AS ART

 **Turbosound**

 **EVr media**

**EUROSELL**  
AUDIO VIDEO PROFESSIONAL

# PROEL

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