

USER MANUAL

APG DYNAMIC PROCESSORS

LPMC216 - LPDS8 - LPDS12S -
LDSP15 - LPDS15S - LPMX4 -
LP3000C - LPSC25



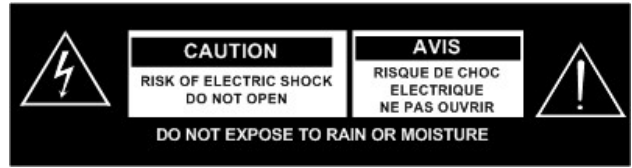
SAFETY INSTRUCTIONS



This symbol alerts you to the presence of un-insulated dangerous voltage inside the enclosure – voltage that may be sufficient to constitute a risk of shock.



This symbol wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Read the manual



DO NOT EXPOSE TO WATER OR HUMIDITY

CAUTION: To reduce the risk of electrical shock, do not remove the cover (or back). No user serviceable parts inside; refer servicing to qualified personnel.
WARNING: To reduce the risk of fire electrical

shock, do not expose this appliance to rain or moisture.

INFORMATION ABOUT APPLIANCES SUPPLIED WITH POWER-CORD.

WARNING: APPLIANCE MUST HAVE GROUNDING

Cables are identified as follow:

Green/Yellow	Ground
Blue	Neutral
Brown	Phase

If colors of the power cable do not match with the cables' color of the socket, please proceed as follow:

- 1 Green/Yellow wire must be connected to the wire identified with E letter or the ground sign.
- 2 Blue wire must be connected to the black wire or to the wire identified with N letter.
- 3 Brown wire must be connected to the red wire or the wire identified with L letter.

CONDUCTOR		COLOR	
		STANDARD	OTHER
L	PHASE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	GROUND	GREEN/YELLOW	GREEN

WARNING: When no grounding exists, problems may appear with the appliance or to the system it is connected to in case of high tension between casing and grounding. Serious injuries or death could happen when simultaneous contact occurs with case grounding and

FOR YOU OWN SAFETY PLEASE READ BELOW:

Water and moisture:

The appliance should not be used near water.

Ventilation:

The appliance should be situated so that its location or position does not interfere with its proper ventilation. It should not be placed on a surface that may block the ventilation openings, or a built-in installation that may impede the flow of air through the ventilation openings.

Heat:

The appliance should be situated away from heat sources (radiators, amplifiers, etc.) that produce heat.

Power source:

The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

Grounding or polarization:

Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

Power-Cord Protection:

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and

plugs, convenience receptacles and the point where they exit from the appliance.

Non-use Periods:

The power cord of the appliance should be unplugged from the outlet when left unused for a long time.

Object and liquid Entry:

Care should be taken so that objects do not fall and liquids are not spilled into the enclosure.

Damage Requiring Service:

The appliance should be serviced by qualified service personnel when:

- the power cord or the plug has been damaged; or
- objects have fallen, or liquid has been spilled into; or
- the appliance has been exposed to rain; or
- the appliance does not appear to operate normally or exhibits a marked change in performance; or
- this appliance has been dropped, or the enclosure damaged.

Servicing: The user should not attempt to service the appliance beyond that is described in the Operating instructions. All other servicing should be referred to qualified service person.

INTRODUCTION..... 3

SPECIFICATIONS 5

DESCRIPTION DES CONTROLS

FRONT PANEL 5

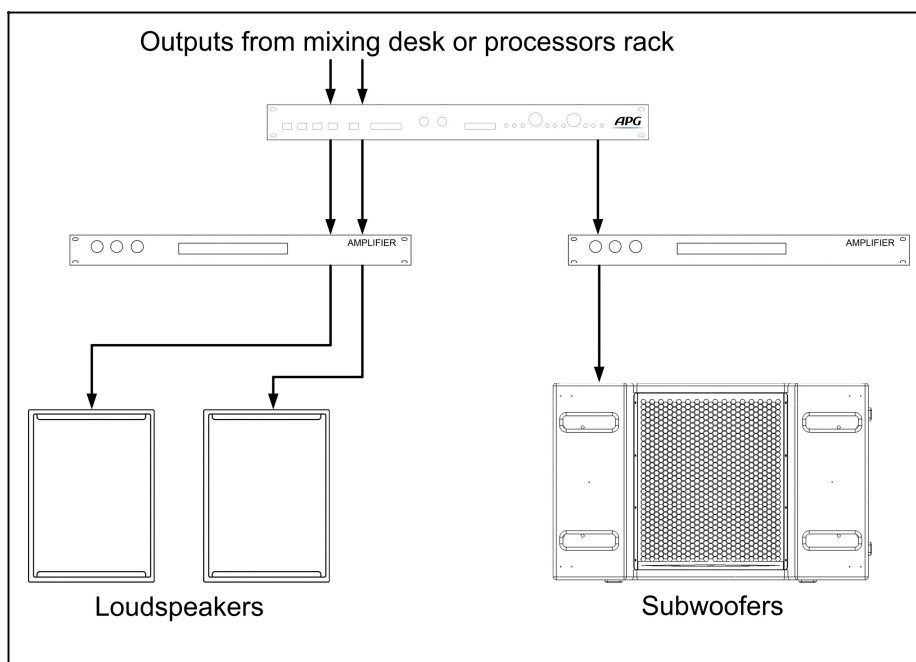
REAR PANEL..... 8

INTRODUCTION

The LP processors provide all the necessary filtering, equalization, signal distribution and dynamic protection for the operation of APG loudspeakers and systems. They are designed to operate in conjunction with the Micro Axial Series, DISPERSION Series, BEAM Series & SECTOR Series and APG subwoofers.

CONNECTING A PROCESSOR IN THE ELECTRO ACOUSTIC CHAIN

Dynamic processors must be connected as the last element before the power amplifiers. In order to easily interface with other equipment, APG processors offer balanced inputs and outputs on XLR connectors, in conjunction with a built-in hum loop eliminator.



Since the APG dynamic processors do not need a "Sense" or Return connection, it is possible to connect several amplifiers and loudspeakers of the same type on a single unit, as long as the audio signal is the same.

Amplifier gain must be set to 26dB gain to respect proper functioning of the active protections of the processors. Most of amplifiers allow this setting.

FREQUENCY RESPONSE PROCESSING

The LP processor includes a number of equalization stages in order to optimize the frequency response of the loudspeakers included in a sound system.

Two different equalizations are available according to the intended application:

- 1 Position MON: near-field use (stage monitoring, distributed systems).
- 2 Position FOH: distant-field (Front-Of-House, long-throw).

For each position there is a set of LF shelving, HF shelving and 3 band parametric EQ.

The processor includes, on each output, a subsonic protection and a dynamic protection including the 3 limiting parameters of operating loudspeakers: Displacement of the diaphragm, Temperature of the moving coil, Power limit of amplifier (CLIP)

FILTERING AND SWITCHES

A "Mute" switch of the "HI" channels allows to temporarily cut the signal to the main speakers.

The subwoofer channel offers the choice of two crossover transfer functions, a level control, a subsonic protection and dynamic protection with the same three parameters control of the loudspeakers.

The loudspeaker/subwoofer crossover is done with a 24dB/octave slope. The subwoofer channel's upper crossover frequency is modified in accordance with the relative physical placement of the subwoofers and the main speakers.

A switch allows choosing operation "with subs" or "without subs".

Engaging the SUB switch introduces the necessary high-pass filtering of the main speakers. The nominal cross-over frequency is comprised between 80 Hz and 110Hz depending on the type of main speakers.

The subwoofer signal is either coming from the summation of left and right channels or from an external signal (such as a dedicated auxiliary send)

DYNAMIC PROTECTIONS

The LP processor include three types of real-time active dynamic protections

- Cone or diaphragm excursion: if the displacement exceeds the elastic capacity of the suspension, the loudspeaker gets damaged, ending in its destruction. An excursion amplitude detection system monitors the displacement and adjusts, if necessary, the cut-off frequency of a sweeping high-pass filter, thus reducing the low frequency content of the signal.
- Voice coil temperature: excessive power increases the temperature of the moving coil, which can eventually burn. A temperature detection simulator, based on the thermal capacity of the voice coil, limits the amplitude of the signal in case of overheating.
- Amplifier clipping: when reaching its limit (overload or clip), an amplifier loses its capability to control the movement of the diaphragm, which then may get distorted or collide with the polar pieces. Monitoring this limit is done in real time for any power rating between 300 and 4000 W. As soon as the clipping threshold is detected, a limiter reduces the amplitude of the signal.
- The combination of these dynamic protections ensures the system is used reliably at the maximum of its capability. These three protection types are based on real-time simulations of the operational limiting parameters of loudspeakers and amps.
- This process, contrary to a "sense return" type of control, can anticipate amplifier clipping right at the processor, before any critical performance happens in the amplifier.
- In addition, this allows using only one processor for a string of amplifiers receiving the same signal.
- Front-panel LED's visualizing the operation of the various protection types, giving the operator an indication of the safety margin of the system.
- Occasional blinking of LED's on transients does not impact the acoustic response of the system, it merely indicates nearing its limits
- Permanent illumination of LED's indicating the limits of the system are being exceeded and damage may result if prolonged.

TECHNICAL DATA

SPECIFICATIONS:

Input:

Balanced on female XLR3 Pin, Ground 1 pin

Nominal level: +4 dBu

Impedance: 20 kOhms

Output:

Balanced on male XLR, Pin 1 Ground

Maximum level: +21 dBu

Impedance: 100 Ohms

Overall information:

Noise: -94 dBu (22Hz -22kHz)

THD less than : 0.01% (4 dBu, 1kHz)

Connectors: XLR 3 pin, ground 1 pin

Consumption: 220/240VAC 15VA

Frequency response: Tailored to optimize frequency response of APG Loudspeakers range

Mechanical :

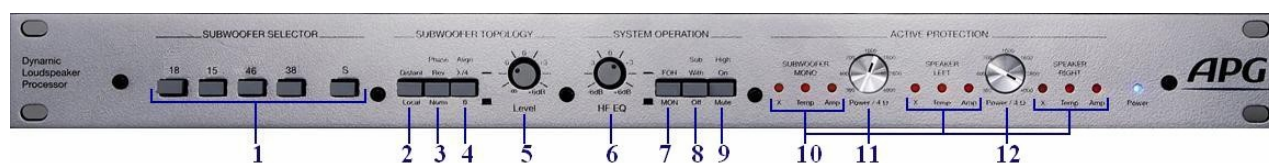
Dimensions : 482,6 mm x 270 mm x 44 mm

Net weight: 4,5 kg

Front panel: Aluminium 3 mm

Coating/finish: Grey Epoxy

FRONT PANEL



A) SUBWOOFER SELECTOR:

- 1) **Selection of type of subwoofer:** The block of switches on the left allows the selection of the type of subwoofer. The choice is based on the size of drivers and their acoustic load: the labels "18" "15" "46" "38" refer to the products reference. The "S" switch must be engaged if the subwoofer's reference includes one.

B) TOPOLOGY OF SYSTEM:

Local / Distant: This switch modifies the crossover frequency in accordance with the relative position of the subwoofers and the main speakers. If the main speakers are stacked on the subs or at less than 1.5 meter (5ft), the switch must be in the Local position. If the speaker is at more than 1.5meter (as when installed on a pole), the switch must be pressed in the Distant position.

Frequency crossover for subwoofer :

	Local	Distant
DS8	110 Hz, 24 dB/Octave	130 Hz, 24 dB/Octave
DS12S	110 Hz, 24 dB/Octave	130 Hz, 24 dB/Octave
DS15	80 Hz,24 dB/Octave	95 Hz, 24 dB/Octave
DS15S	80 Hz, 24 dB/Octave	95 Hz, 24 dB/Octave
3000C	80 Hz,24 dB/Octave	95 Hz,24 dB/Octave

- 3) **Phase :** When depressed, this push-button introduces a polarity reversal to compensate wiring problems or acoustical phase reversals
- 4) **Align:** the phase of the subwoofers relative to the main speakers can be aligned, optimizing the system's crossover.
- 5) **Sub Level:** this potentiometer controls the level of the subwoofers. A center detent indicates the nominal position. The range is from infinite attenuation to 6 dB gain.

FRONT PANEL



C) SYSTEM OPERATION:

- 6) **HF EQ:** This pot controls the clarity of the system, adding or subtracting HF energy via a "tilt" filter. The range is from -6 to +6 dB.
- 7) **MON/FOH:** This switch engages equalization, optimized for near-filed applications (stage monitor, distributed sound). In the FOH position, the equalization is adapted for far-field (Front-Of-House, long-throw, high power)
- 8) **With Sub/No Sub:** When engaged this switch inserts a High pass filter in the main speakers providing the necessary cross-over function needed when subwoofers are used.
- 9) **High ON/OFF:** When released, this switch cuts the signal going to the main speakers.

D) PROTECTIONS DISPLAYS :

Active mode protection does not alter sound reproduction.

- 10) **PROTECTION:** Each output incorporates a protection circuitry which simulates the limiting parameters of the loudspeakers:
 - Excursion of the cone driver,
 - Temperature of the moving coil,
 - Clip of the amplifier.

A set of 3 LED's is used to indicate each operational parameter.

The LED's are activated when the operational parameters of the speaker are approaching dangerous levels.

Flashing of the LED's indicate normal activity of the system.

Continuous lighting of LED's indicate that one or several parameter limits are constantly exceeded, and that level should be reduced

- 11) **CALIBRATION:** This potentiometer is used to calibrate the anti-clip protection of the SUB amp. (see chapter E)
- 12) **CALIBRATION:** This potentiometer is used to calibrate the anti-clip protection of the main amps. (see chapter E)

E) CALIBRATION OF ANTI-CLIP PROTECTION:

Practical Calibration method:

Position the "Power" potentiometers at their maximum.

Using a signal featuring strong dynamics, increase the signal level until reaching amplifier saturation ("clip") (most amplifiers comprise front panel clip LED's).

Pull down "Power" potentiometers until the amplifier leds switch off. Amplifier's LED's must go off while the processor's Amp LED must light up.

Theoretical Calibration method:

Set the "Power" potentiometers on the position corresponding to the theoretical power of the amplifier under 4 Ohms.

REAR PANEL



13) **Normal/Bridge:** this switch must be engaged when using a bridged amp (32db gain)

14) **Sub Input:** When this switch is released, the subwoofer derives its input from the sum of inputs A and B; when it is engaged; it receives the signal from an external source (such as a mixer's auxiliary send).

NB: For proper operation of the protection circuitry, the gain of the amplifiers must be 26dB. Most amplifiers provide this gain as standard.

Warning: Excessive gain may result in speaker damage.

In particular, bridged amps exhibit a gain 6db higher than standard.

When using bridged amps it is necessary to use one of the following process:

- *Use the button normal/bridge situated on the rear panel*
- *Modify the amp's gain structure,*
- *Use a 6 db input attenuator,*

Turn the amp's potentiometer down 6 dB

APG, TG29, TG32, attenuators & TGxx (custom made), for 29dB, 32dB or other value are available on order.

All inputs and outputs are electronically balanced: the connectors are 3 pin XLR'S

The mains receptacle is an EEC type with the center prong connected to ground. For obvious safety reasons, it should always be connected.

The processors can be operated continuously; thus they do not have a mains switch.

The processor uses a hum loop eliminator. If any hum or buzz occurs, it is not caused by a ground loop

F) When replacing mains fuse, type & value must be identical as indicated bellow:

220-240Vac 0,1 A Temp.

100-126Vac 0,2 A Temp.

APG

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