USER'S MANUAL
MANUAL DE USUARIO

HD series

High Dynamics Professional Power Amplifiers
Amplificadores profesionales de alta dinámica

amate audio

Great sound from Barcelona since 1972

In view of the fact that the requirements of audio professionals are increasingly greater, we would like to thank you for choosing a AMATE AUDIO product. At Amate Audio S.L., we have incorporated the highest technology into our products with the conviction that what you have purchased will give you an optimum performance and operation, however adverse the working conditions to which you may submit it.

In order to achieve the best performance and correct operation, it is important that you read the instruction manual carefully before making any connections.

In addition, we recommend that you read the Warranty Certificate enclosed with this Manual in case you may observe any anomaly prior to or immediately after start up, and how to proceed on each case.

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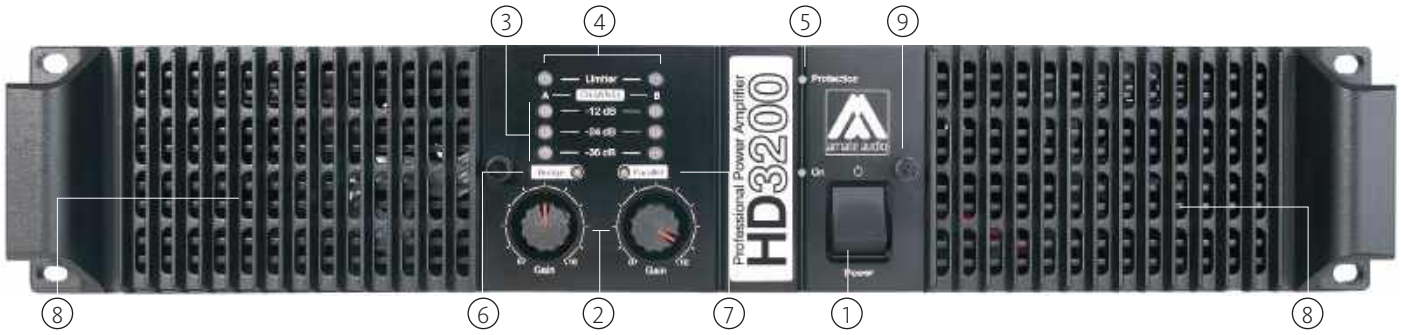
1. General features

Our amplifiers are modular in design. The rigid metal chassis provides easy access to the electronic circuits. Fully independent safety circuits protect the amplifier in the event of a short circuit of the loudspeaker output, abnormal increases in temperature and/or excessive amplifier consumption.

The HD Series amplifiers offer high dynamic performance with moderate average energy consumption, as well as good damping factor, which results in clean response to transients and high quality playback.

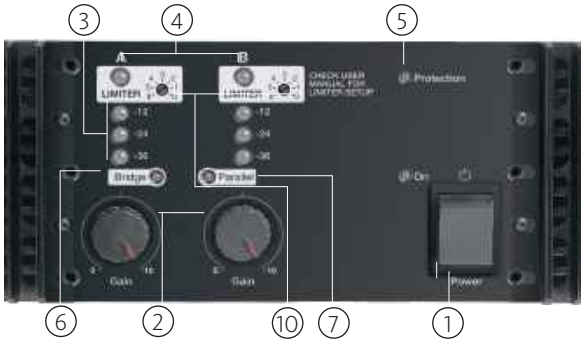
The power modules are integrated in a tunnel-shaped own developed heat sink, which combines high dissipation power with an excellent thermal inertia, thanks to the high extraction effectiveness of the incorporated fans.

2. Front panel features



1) Power Switch – On-Off switch with Led
2) Volume Controls – Potentiometers to independently control the output level for each channel.
3) VU-Meters – Independent output signal indicators, with Leds for different relative levels: -36dB, -24dB & -12dB.
4) Limiter – Led indicating the operation start of the anti-clipping or limiter systems.
5) Protection – Led indicating the operation of any of the protection system of one or both channels. At power up normally it will turn ON momentarily. If it does not turn OFF, indicates a problem of malfunction of the amplifier.
6) Bridge mode – Led indicating the bridge mode.
7) Parallel mode – Led indicating parallel mode.
8) Cooling outs – Forced air output for temperature regulation.
9) Panel screws – Detach (no tools needed) to access the internal panel.

3. Internal view (Front panel out)



10) Limiter adjust – Easy adjustment for the limiter threshold of each output. For more information see Section “Limiter Adjustment”.

4. Rear panel features

1) IEC power connector – Input power supply 230V AC.
2) Breaker – Overcurrent protection.
3) FANS – Forced ventilation turbines. Do not cover.
4) XLR Input A – Electronically balanced for channel A.
5) XLR Link A – Signal link of the A channel (for another amplifier).
6) XLR Input B – Electronically balanced for channel B.
7) XLR Link B – Signal link of the B channel (for another amplifier).
8) Mode selection – Switch: Stereo, Bridge and Parallel mode.
9) Speakon Output A – Loudspeaker output A connection via 2-pole Speakon (+1 -1) or loudspeaker output A+B (A: +1 -1; B: +2 -2) connection via 4-pole Speakon.
10) Binding Posts – Separate outputs of each channel. This connector is connected in parallel with the Speakon Output and they are recommended when requiring separate ways or a wire section greater that the Speakon Output.
11) Speakon Output B – Loudspeaker output B connection via 2-pole Speakon (+1 -1).

5. Connection to the mains

First, it is essential to ensure that the main voltage corresponds to the apparatus voltage. It is not advisable to connect and disconnect the mains wire without first making sure that the switch is in its OFF position.

The amplifier is equipped with an Inrush current limiter circuit, which avoids current excess when powering up. In addition to that, a breaker switch located close to the IEC socket protects the amplifier when the average current consumption is out of the specified range.

AC 220/240 V – 50/60 Hz
AVERAGE CURRENT DRAW
3 A at 1/8 power
6 A at 1/3 power

CAUTION: the connection to any other voltage different from the one specified can damage the amplifier immediately.

6. Connection of the loudspeakers

The loudspeaker system should be connected to the Speakon or binding posts connectors ensuring that the polarity is correct. It is very important to use a cable fitting to the power of the amplifier in order to maintain the high damping factor these units provide.

As a general guideline, we offer a table showing the recommended cable section for different cable length, in order to keep power and damping factor loss in acceptable values.

	Max. recommended cable length	
Cable Section	8 Ohm Load	4 Ohm Load
2.5mm2 (AWG14)	20 m	10 m
4mm2 (AWG12)	30 m	15 m
6mm2 (AWG10)	40 m	20 m
8 mm2 (AWG 8)	50 m	25 m

There are two speaker outputs: CH A and CH B both fitted with Speakon sockets and Terminal type (binding posts) connectors.

The Speakon connector (not included) has 4 terminal poles labeled as +1, -1, +2 and -2. Each pole can fit a maximum wire section of 4mm^2 (12AWG). In mobile applications this connection may also be soldered to guarantee better contact.

The Binding Posts are marked with Red for the Positive Pole, and Black for the Negative Pole. They accept direct cable connection up to 8mm^2 section (8AWG).

The outputs are configured as following for the STEREO and PARALLEL amplifier modes:

Output	Speakon A	Speakon B	Binding Post
+ Ch A	1 +	N.C.	Red (A)
- Ch A	1 -	N.C.	Black (A)
+ Ch B	2 + (*)	1 +	Red (B)
- Ch B	2 - (*)	1 -	Black (B)

For BRIDGE mode, the following output connection is needed:

Output	Speakon A	Speakon B	Binding Post
+ Pole	1 +	N.C.	Red (A)
- Pole	2 +	N.C.	Red (B)

(*) Although it is possible to get the output of both channels with the same connector (Speakon A) when not strictly necessary, it is recommended whenever possible to use one Speakon connector for each output (Speakon A for CHA, Speakon B for CHB). With only two active pins +1 y -1 to avoid undesired signal crosses between positive pins that can damage the amplifier.

7. Warnings

CAUTION high risk of malfunction or mayor damage!

As specified in the previous point, there is the posibility to have both channel outputs (A and B) through the SPEAKON A, this function is very useful when using the amplifier in BRIDGE mode, this is posible because the SPEAKON A uses all the pins (+1 -1 belong to channel A and +2 -2 to channel B).

BE CAREFUL WHEN USING THIS KIND OF CONNECTION, A SHORTCIRCUIT BETWEEN THE POSSITIVE PINS (+1 +2) CAN DAMAGE THE AMPLIFIER OR EVEN THE DESTRUCTUTION OF ONE, OR BOTH, POWER MODULES THIS IS BECAUSE A SHORTCIRCUIT BETWEEN POSITIVE PINS MAKES ONE CHANNEL WORKS AGAINST THE OTHER

Load Capacity: The HD amplifiers have a sufficient current capacity to admit very low loads (down to 2 Ω). It should be taken into account that many loudspeakers using passive filters and whose nominal impedance is of 8 Ω do in fact present impedance much lower than the nominal one at certain frequencies. Therefore, it is advisable to use 2 Ω loads only when one is perfectly aware of the impedance curve of the loudspeaker system to be connected. Otherwise, the amplifier could cause cut-offs at the output due to the short circuit protection (low impedance, <2 Ω) or over heating.

For lower nominal impedance connections (2 Ω STEREO/PARALLEL; 4 Ω BRIDGE) see section 13. Limiter adjustment.

8. Pre-amp connection

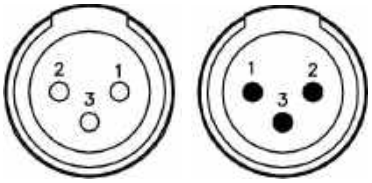
The input (BALANCED INPUTS) enables connection through XLR-3 connectors. The amplifiers incorporate balanced input for a high rejection of noise generated by long signal cables, proximity to electric wires or sources causing them.

BALANCED Inputs/auxiliary outputs:

1. Shield
2.(+) Live
3. (–) Return

UNBALANCED Inputs/auxiliary outputs:

1. Not connected (* See Note)
2. (+) Live
3. Ground



(*) NOTE: *This amplifier follows the ground interconnection specification defined by AES48-2005 standard of the Audio Engineering Society, on grounding and EMC practices for audio equipment containing active circuitry.*
For that reason, when a source with unbalanced outputs should be connected, ***it is recommended not to use Pin1 of the XLR, and never connect it to Pin3****. If a shielded cable is available, the shield may be connected to Pin1 of the XLR to get some shielding, leaving the other end unconnected. Pin1 connection is only advised if the equipment with the unbalanced output has a dedicated connection for the shield, separate from the audio signal ground reference.*

9. Operation modes

Stereo
In Stereo mode, each one of the amplifier channels works independently from the other.

To use Stereo Mode, make sure that the MODE selector, located next to the input section (BALANCED INPUTS) is in the STEREO position (down).

Features:
* Independent input for each channel
* Independent volumen for each channel
* Independent limiter adjustment for each channel
* Independent anti-cliping system for each channel

Parallel
In this mode, the signal inserted at CHA input will be routed to both channel's power modules (CHA and CHB), ignoring the signal at CHB input. This option is useful when a series of speakers must be fed with the same signal, because the signal can be routed saving extra cable connections between inputs.

To use Parallel Mode, place the MODE selector switch in PARALLEL position. The corresponding indicator located on the front panel will light up (PARALLEL).

Features:
* One input for both channels (CH. A)
* Independent volumen for each output
* Independent limiter adjustment for each output
* Independent anti-cliping system for each ouput

Bridge (Mono)
In this position both channels are used as a single amplifier, capable of delivering the double of the power. In this operational mode the input signal must be fed through CHA input connector. At the output, connections must be made as following:

To use Bridge Mode, place the MODE selector switch in Bridge position. The corresponding indicator located on the front panel will light up (BRIDGE).

Features:
* One input (CHA)
* One volumen control(CHA)
* One limiter adjustment (CHA)
* Anti clipping system (CHA or CHB)

The + Pole of the speaker is connected to the Speakon Pin +1 of CH A, or the Red terminal of the CH A. The – Pole of the speaker is connected to the Speakon Pin +2 of CH A, or the Red terminal of the CH B.

IMPORTANT: The recommended load impedance for bridge mode is 8 Ω. If the load impedance is 4 Ω, each power module will work at an effective impedance of 2 Ω, and therefore permanent installations are discouraged in these conditions (see "Warnings" section 7). Please check the specifications table to learn the delivered power in Bridge mode.

CAUTION: *In this situation, it could be dangerous to handle the connections by non-authorized personnel, due to manipulation of high voltage.*

10. Cooling

The HD Series are equipped with electronically controlled forced ventilation, which is carried out by two turbines situated at the rear panel, one in front of each power module. According to the temperature, two different fan speeds are set, and the hot air is evacuated through the front panel. It is very important to favor the good air circulation to keep the equipment in a stable temperature work pattern; therefore any possible obstruction must be avoided both in the rear and front part. In addition, an installation close to heat generator sources or lack of ventilation must be avoided (closed cabinets).

WARNING: *As the forced air circulation (from the back to the front) can produce the introduction of dust and dirt in general over the internal radiators, it is highly recommended to make an internal cleaning operation at least once a year, depending on the particular circumstances of each installation or use.*
Any deterioration of the amplifier caused by an evident presence of dust and/or internal humidity, will EXCLUDE of any right of application of the Warranty for this product.

11. Start-up and operation

Once the mains, loudspeaker and sound sources (input) connections have been made correctly, start up the pre-amp sources and then press the ON/OFF switch. Turn the volume controls clockwise to obtain the maximum gain.

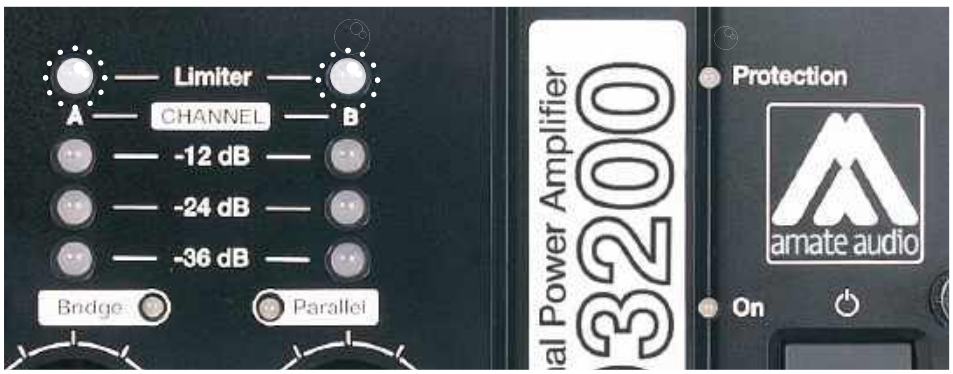
The amplifier is equipped with a Soft Start circuit, which assures a gentle, pop free start up, avoiding stress to the loudspeakers.

In order to obtain the maximum dynamic range from the amplifier, it is recommended to set always the gain controls to the maximum, and control the output power by regulating the signal level at the amplifier's input using the processor gain control (in this condition of the gain controls to the maximum, the amplification is fixed at 32dB per channel).

When the maximum output power has been reached in any of both channels , this will be indicated by the corresponding led LIMITER, advising that it is recommended to lower the general volume coming from the mixer our sound source connected to that channel (previous crossover, equalizer, processor, etc.).

12. Clip / Limiter

This circuit prevents the amplifier from delivering distortion at the loudspeaker outputs. Its action is practically inaudible and protects the loudspeaker voice coils. A LED on the front panel indicates the action of the anti-clipping limiter of each channel. If the clip LED is lit intermittently, this may be interpreted as correct, but it means that the amplifier is reaching its maximum power at this point.

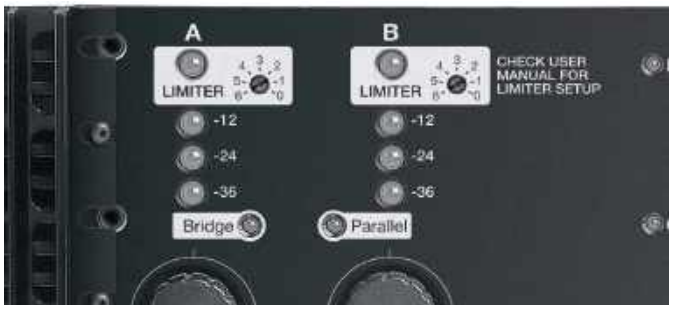


WARNING: Make sure the LED LIMITER is not alight permanently!
No extra power is obtained in this way, loosing dynamics and sound quality.

13. Limiter adjustment

The 2014 version HD amplifiers feature limiter adjustment, in which the user, with an easy adjust, can limit the output power of each output independently. It is an easy access adjustment and it is located behind the front panel.

The front panel is fixed with two M4 screws with knurled head that can be loosen with the fingertips. After removing the front panel you will find two LIMITER sections, one per channel, they can be adjust with a small flat-tip screwdriver.



The factory setting for this parameter is set to fully clockwise, this way the device delivers its maximum power with minimum distortion thanks to its anti-clipping system.

Once the limiter settings have been adjusted, please attach again the front panel with the two M4 screws with knurled head.

OUTPUT POWER TO LIMITER SETTING

LOW LOAD (BRIDGE 4 Ω or STEREO/PARALELL 2 Ω):

CAUTION: when you want to use the amplifier in bridge mode @ 4 Ω or Stereo/parallel mode @ 2 Ω at full power it is recommended to set the limiter in position 2 as shown in the attached table to avoid overheating. (Only HD4000 is ready to work on any position)

BRIDGE MODE 4 Ω		HD800	HD1200	HD2000	HD3200
	BRIDGE MODE 4 Ω	1180 W	1640 W	2200W	4400W
STEREO/PARALLEL MODE 2 Ω		**HD800**	**HD1200**	**HD2000**	**HD3200**
	STEREO/ PARALLEL MODE 2 Ω	590 W	820 W	1100 W	2200 W

STEREO PARALLEL:

In STEREO/PARALLEL mode each channel have an independent limiter adjustment; see the attached table of the delivered output deppending of the limitrer adjustment:

STEREO/PARALLEL MODE		HD800	HD1200	HD2000	HD3200	HD4000
	16 Ω	115 W	210 W	350 W	650 W	390 W
	8 Ω	230 W	420 W	700 W	1300 W	750 W
	4 Ω	450 W	800 W	1300 W	2400 W	1480 W
	16 Ω	76 W	110 W	150 W	320 W	250 W
	8 Ω	152 W	220 W	300 W	600 W	475 W
	4 Ω	295 W	410 W	550 W	1100 W	975 W
	16 Ω	50 W	70 W	90 W	180 W	180 W
	8 Ω	100 W	140 W	180 W	320 W	375 W
	4 Ω	195 W	280 W	350 W	625 W	725 W
	16 Ω	25 W	38 W	50 W	100 W	95 W
	8 Ω	50 W	76 W	100 W	200 W	190 W
	4 Ω	95 W	135 W	200 W	400 W	380 W

BRIDGE:

In BRIDGE mode the limiter adjusment is the one for channel A, the same with the volume adjust, see attached table of the delivered output power depending on the limiter adjustment:

BRIDGE MODE 8 Ω		HD800	HD1200	HD2000	HD3200	HD4000
	8 Ω	900 W	1600 W	2800 W	4800 W	2450 W 4200 W(4Ω)
	8 Ω	590 W	820 W	1100 W	2200 W	1132 W 1950 W (4Ω)
	8 Ω	390 W	540 W	700 W	1250 W	850 W 1450W (4Ω)
	8 Ω	190 W	270 W	400 W	800 W	500 W 760 W (4Ω)

Note (1): The limiter adjustments and power that the amplifiers can deliver with this adjustment are relative, because the HD amplifiers feature a dynamic limiting system able to offers the best results.

The conditions to get the data from the tables has been created using 100 Hz sineburst input signals with 100 ms at 0 dB and 400 ms at -20 dB. This condition is considered as a standard / heavy duty in the Audio Industry.

14. Protections

Temperature

An inadequate installation or any other anomaly related to cooling may cause that the amplifier's temperature exceeds their safe limit (>90ºC), exposing its internal components to failure. The temperature protection would activate the corresponding limiters to reduce (balance) the output power with the overtemperature, in order to keep the amplifier working safely without undesirable stops. In case the temperature keep rising, the corresponding protection circuit will cause a stop during a certain time according to the seriousness of the anomaly detected. The PROTECTION and LIMITER leds will light on at the same time, and the output of the affected channel(s) will be disconnected.

In models HD2000 and HD3200, before the amplifier completely stops because of temperature problems, it will reduce the output level by 6dB approximately. Once the temperature reduce to normal parameters, the normal output level will be reestablished.

Short circuit

In case of very low impedance or short circuit in any loudspeaker output, the LIMITER led is activated and a significant descent of the output level of the affected channel will be observed (loss of volume, but keeps working).

Direct Current

In the case that due to some malfunction the power module tries to deliver direct current (DC) at the output, the protection circuit will immediately disconnect the module to avoid damage to the loudspeakers. In that case, the PROTECTION and LIMITER led's will light on at the same time and the output will be disconnected.

Other causes that could prevent the normal work of the amplifier can also activate the PROTECTION. Under those circumstances, the installation has to be revised according to the basic principles described below:

- Disconnect all the connected peripheral equipments (sources, pre-amplifiers, and loudspeakers). Leave the amplifier "alone" and verify if the anomaly disappears or if it remains in only one channel or both.

- Temperature: Cooling (possible air obstruction. Check if the fans are working and make an internal cleaning).

- Short circuit: Check the state of the loudspeaker line (possible short circuit, disconnect and check if the anomaly disappears).

- C.C. at the output (DC): Possible serious breakdown. Contact an authorized technical service.

In all cases it is recommended to go through all previous checkpoints before contacting the authorized technical service and reporting the observed problem.

15. Technical features

	HD800	HD1200	HD2000	HD3200	HD4000
Voltage Gain	32 dB				
Input Sensitivity	1 V	1.25 V	1.74 V	2 V	1.88 V
Input Impedance	20 kΩ				
Slew Rate	+/-12 V/µs				
Output Power (1 kHz - 0,1% THD) [1]					
Stereo 8 Ω	230 + 230 W	350 + 350 W	600 + 600 W	1000 + 1000 W	650 + 650 W
Stereo 4 Ω	400 + 400 W	600 + 600 W	1000 + 1000 W	1750 + 1750 W	1200 + 1200 W
Stereo 2 Ω [1]	550 + 550 W[2]	850 + 850 W[2]	1500 + 1500 W[2]	2500 + 2500 W[2]	2100 + 2100 W[3]
Bridge 8 Ω	800 W	1200 W	2000 W	3500 W	2840 W
Bridge 4 Ω [1]	1100 W[2]	1700 W[2]	3000 W[2]	5000 W[2]	4200 W[3]
Average Current draw [4]	3 A @ 230 V AC	4 A @ 230 V AC	5 A @ 230 V AC	6 A @ 230 V AC	7 A @ 230 V AC
Frequency Response	20 Hz - 20 kHz (0/-1 dB)				
Damping Factor (1 kHz @ 8 Ω)	280	300	350	400	350
Crosstalk	60 dB		65 dB		
S/N Ratio (A-weighted)	102 dB (A)	104 dB (A)	105 dB (A)	108 dB (A)	108 dB (A)
Mains	220 – 240 V AC- 50/60 Hz				
Dimensions (HxWxD)	88 x 482 x 420 mm	88 x 482 x 420 mm	88 x 482 x 440 mm	88 x 482 x 440 mm	88 x 482 x 440 mm
Weight	14 kg	15 kg	18 kg	21 kg	21 kg

Note (1): *Continuous burst tone 20 ms (0 dB) / 480 ms (-20 dB) in accordance with EIA RS-490 and IEC 60268-3(IHF A-202).*
Note (2): *Driving the amplifier at 2 Ω channel / 4 Ω bridge at full power mode in poor ventilation conditions may cause a thermal overload protection. 2 Ω power is time limited by mains circuit breaker.*
Note (3): *Specifically designed for long term operation in bridge 4 Ω at full power.*
Note (4): *Heavy duty musical program.*

Specifications subjected to change without prior notice (April 2016).

If you follow the instruction manual and recommendations, we are sure that this amplifier will always perform within the predetermined parameters, ensuring its long life and total efficiency.

Certificate of warranty (enclosed document)

The Conditions and Observations for the application of this Contract of Warranty are for all the territories of Spanish.

For other countries, the specifications of each country must be complied with, as only the Representative or National importer themselves can be held responsible for warranty terms.

For any claim of a Legal type, only the Ordinary Courts corresponding to the city of Terrassa (Barcelona-Spain) will be valid.

Please follow the instructions on the last page of this manual. Please READ the instructions and conditions gathered in the Warranty Certificate to fully take advantage of the After-Sales Service.

Amate Audio S.L. le agradece la confianza depositada en la compra de este amplificador. Deseamos informarle de que todos nuestros productos incorporan las más avanzadas tecnologías en todo su proceso de fabricación, así como la más depurada selección de todos sus componentes, lo que nos permite garantizarle un óptimo rendimiento y funcionalidad en cualquiera de las aplicaciones y condiciones de trabajo a las que usted le someta.

No obstante y para obtener su máximo rendimiento y un correcto funcionamiento, es importante leer detenidamente el presente manual de instrucciones antes de cualquier conexión. Asimismo le recomendamos que lea también la Carta de Garantía adjunta a este Manual por si observara cualquier anomalía previa o inmediata a su puesta en marcha y como proceder en su caso.

ÍNDICE

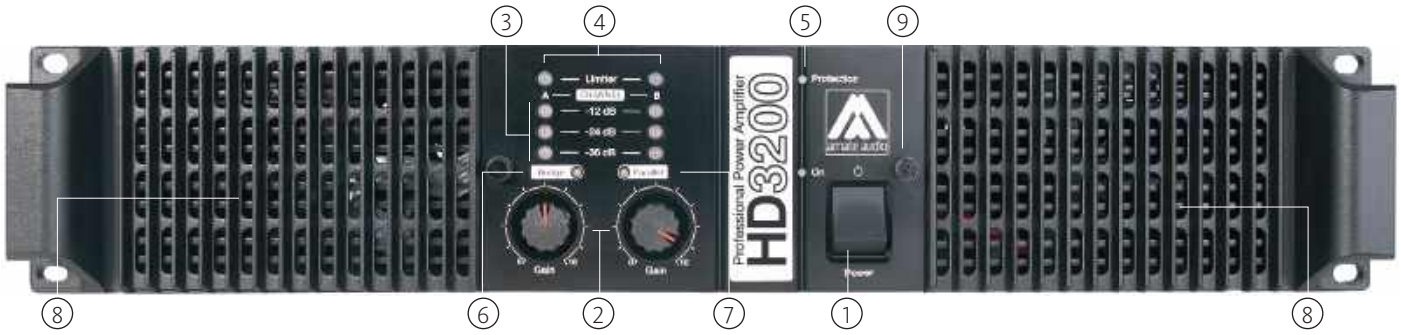
DOCUMENTO ADJUNTO **CERTIFICADO DE GARANTÍA**

1. Características Generales

El diseño de nuestros amplificadores de potencia es modular. El chasis metálico de gran rigidez y el elaborado diseño interior, permiten un fácil acceso a los circuitos electrónicos. Los circuitos de protección, totalmente independientes, protegen al amplificador en el caso de un cortocircuito en la salida de altavoces, un incremento anormal de la temperatura y/o un consumo excesivo del amplificador.

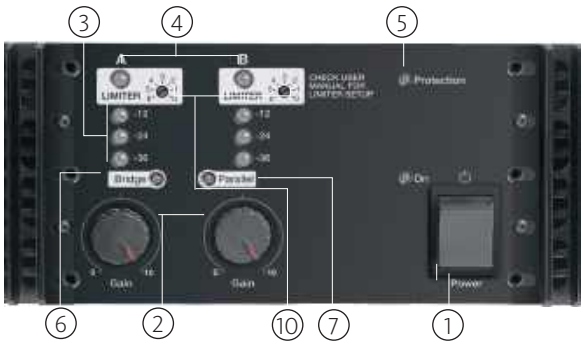
Los amplificadores HD Series poseen una muy elevada potencia dinámica con un moderado consumo energético medio, además de un buen factor damping, lo que se traduce en una limpia respuesta a transitorios y una reproducción de gran calidad. Los módulos de potencia integrados en su correspondiente radiador-túnel, de diseño propio, aúnan un alto poder de disipación de calor con una excelente inercia térmica, gracias a la gran efectividad de extracción que presentan los ventiladores incorporados.

2. Panel Frontal



1) Interruptor de puesta en marcha – Con Led indicador de "On".
2) Control de volumen – Potenciómetros para ajustar el nivel independiente de cada canal.
3) VU-Meters – Indicadores del nivel de salida independientes para cada canal, con leds para indicar los niveles relativos de: -36dB, -24dB y -12dB.
4) Limitador – Led indicador de la función de limitador y anti-clipping.
5) Protección – Led que indica la activación de cualquiera de las protecciones integradas, de uno o ambos canales. En la puesta en marcha es normal que se ilumine brevemente. Si no se apaga, indica un problema en el amplificador.
6) Bridge mode – Led indica modo bridge.
7) Parallel mode – Led indica modo parallel.
8) Salidas de ventilación – Salidas de aire forzado para refrigeración del equipo.
9) Tornillos panel – Desenroscar (sin herramientas) para acceder al panel interno.

3.Panel Frontal interno



10) Ajuste del limitador – Ajuste fácil del umbral del limitador para cada canal. Para más información ver el Capítulo "Ajuste del Limitador".

4. Panel Posterior

1) Conector de red IEC – Entrada de red 230VAC
2) Breaker – Protección de sobrecorriente.
3) VENTILADORES – Turbinas para la ventilación forzada. No cubrir.
4) Entrada XLR A – Balanceada electrónicamente para el canal A.
5) Salida XLR Link A – Link de señal canal A (para otro amplificador).
6) Entrada XLR B – Balanceada electrónicamente para el canal B.
7) Salida XLR Link B – Link de señal canal B (para otro amplificador).
8) Selección de modo – Conmutador: Stereo, Bridge y Parallel.
9) Conector Speakon A – Salida A para conexión de altavoces mediante Speakon de 2 polos (+1 -1) o salida A+B para conexión de altavoces (A: +1 -1; B: +2 -2) mediante Speakon de 4 polos.
10) Bornes – Salidas separadas para cada canal, conectadas en paralelo con las salidas Speakon. Se recomienda utilizar los bornes en caso que se necesiten cables de sección más elevada que la que admite el Speakon.
11) Conector Speakon B – Salida B para conexión de altavoces mediante Speakon de 2 polos (+1 -1).

5. Conexión a la red

En primer lugar es necesario asegurarse de que el voltaje de red corresponde al del equipo.

Es recomendable verificar que el interruptor de puesta en marcha está en posición apagado. El amplificador está dotado de un circuito "Soft-Start" de arranque suave, que limita excesos de corriente en la puesta en marcha. Además, junto a la toma de corriente se encuentra el interruptor Breaker, que protege al equipo en caso que el consumo medio de corriente esté fuera de los parámetros normales.

AC 220/240 V – 50/60 Hz
AVERAGE CURRENT DRAW
3 A at 1/8 power
6 A at 1/3 power

PRECAUCIÓN: La conexión a un voltaje diferente del especificado puede dañar inmediatamente al amplificador.

6. Conexión de altavoces

El sistema de cajas acústicas debe conectarse al conector Speakon o a los bornes, asegurándose de que la polaridad sea la correcta. Es muy importante utilizar el cable adecuado a la potencia del amplificador para mantener el elevado factor damping que estas unidades ofrecen.

A título orientativo, ofrecemos una tabla de valores de la sección mínima recomendada dependiendo de la distancia, para mantener las pérdidas de potencia y de factor damping en valores aceptables.

	Longitud cable max. recomendada	
Sección del cable	Carga 8 Ohm	Carga 4 Ohm
2.5mm2 (AWG14)	20 m	10 m
4mm2 (AWG12)	30 m	15 m
6mm2 (AWG10)	40 m	20 m
8 mm2 (AWG 8)	50 m	25 m

Se dispone de dos salidas para altavoces. Canal A y Canal B, provistas de una base para conector Speakon, y un par de Bornes para cada una.

El conector Speakon necesario (no suministrado con el aparato), dispone de 4 puntos de conexión denominados +1, -1, +2, -2 y admite un máximo de 4 mm^2 de sección (12AWG). Para aplicaciones móviles se recomienda soldar el contacto para asegurar su fijación.

Los Bornes están marcados con el color Rojo para el polo positivo del altavoz y con el color Negro para el polo negativo. Aceptan conexión directa de cable hasta 8mm^2 de sección (8 AWG).

Las salidas están configuradas de la siguiente manera para el modo STEREO o PARALLEL:

Output	Speakon A	Speakon B	Binding Post
+ Ch A	1 +	N.C.	Red (A)
- Ch A	1 -	N.C.	Black (A)
+ Ch B	2 + (*)	1 +	Red (B)
- Ch B	2 - (*)	1 -	Black (B)

Para el modo BRIDGE, utilizar el Speakon A o los Bornes, con la siguiente configuración:

Output	Speakon A	Speakon B	Binding Post
+ Pole	1 +	N.C.	Red (A)
- Pole	2 +	N.C.	Red (B)

(*) Aunque es posible obtener la salida de los dos canales a través de un mismo conector (Speakon A), se recomienda siempre que sea posible utilizar un conector Speakon para cada salida (Speakon A para CHA, Speakon B para CHB); con solo dos polos activos +1 y -1 para poder realizar conexiones libres de cruces entre los polos positivos y de esta manera evitar posibles problemas y averías.

7. Advertencias

ATENCIÓN ¡ALTO RIESGO DE MALFUNCION O AVERÍA¡

Según lo especificado en la configuración conexiones de altavoces; existe la posibilidad de obtener la salida de ambos canales del amplificador en el SPEAKON del canal A, esta función es especialmente útil cuando se esta trabajando en el modo "Bridge", esto es posible por que se utiliza todas las salidas de este conector (las salida +1 -1 corresponden al canal A y las salidas +2 -2 corresponden al canal B)

ROGAMOS SE TENGA ESPECIAL PRECAUCIÓN AL UTILIZAR ESTE TIPO DE CONEXIONADO, UN CRUCE ENTRE LOS POLOS POSITIVOS (+1 Y +2) PUEDE PROVOCAR UNA MALFUNCION, DAÑAR AL AMPLIFICADOR O OCASIONAR GRAVES AVERÍAS COMO LA DESTRUCCIÓN DE UNO, O AMBOS MODULOS DE POTENCIA DEBIDO A QUE UN CRUCE ENTRE LOS POLOS POSITIVOS HACE TRABAJAR UN CANAL CONTRA EL OTRO

Capacidad de carga: Los amplificadores HD Series tienen capacidad de corriente suficiente para aceptar cargas muy bajas (hasta 2 Ω). Hay que tener en cuenta que muchos altavoces de impedancia nominal 8 Ω que utilizan filtros pasivos, a ciertas frecuencias presentan impedancias mucho más bajas de la nominal, por lo tanto, es recomendable usar cargas de 2 Ω solo cuando se conoce perfectamente la curva de impedancia de los sistemas de altavoces a conectar. En su defecto, el amplificador podría provocar cortes en la salida por cortocircuito (baja impedancia, <2 Ω) o por sobre calentamiento.

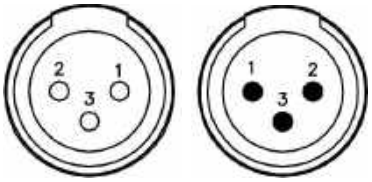
Para conexiones de cargas inferiores a las nominales ver sección 13, ajustes de limitador

8. Conexión de previos

Las entradas (BALANCED INPUTS) permiten la posibilidad de conexión mediante XLR-3. Los amplificadores, incorporan entradas balanceadas para un elevado rechazo de los parásitos generados por cables de señal largos o cercanos a cables eléctricos o fuentes que los provoquen, y garantizar así, una perfecta respuesta en frecuencia.

Entradas y salidas BALANCEADAS:
1. Malla
2. (+) Vivo
3. (–) Retorno

Entradas y salidas NO BALANCEADAS:
1. No conectar (*ver nota)
2. (+) Vivo
3. Malla



(*) NOTA: *Este equipo sigue el esquema de conexionado de masas especificado por el estándar AES48-2005 de la Audio Engineering Society, sobre interconexiones de equipos de audio con circuitos activos.*
Por este motivo, cuando se desea conectar una salida no balanceada al amplificador ***se recomienda no utilizar el Pin 1 del XLR, y en ningún caso conectarlo con el Pin 3****. Si se utiliza cable mallado se puede conectar un extremo de la malla al Pin1 del XLR y dejar el otro extremo sin conectar para conseguir cierto apantallamiento. La conexión del Pin 1 se recomienda únicamente si el equipo con la salida no balanceada tiene una conexión específica para la malla (tierra), separada de la masa o referencia de señal.*

9. Modos de funcionamiento

Stereo
En este modo cada uno de los canales del amplificador funciona independientemente del otro

Para seleccionarlo, asegurarse de que el Selector de MODE, situado junto a la sección de Entradas (BALANCED INPUTS), se encuentra en la posición STEREO.
Características:
* Entrada independiente para cada canal
* Volumen independiente para cada canal
* Ajuste limitador independiente para cada canal
* Sistema anti-cliping independiente para cada canal

Parallel
Esta función envía la señal introducida en la entrada del CHA a los dos módulos de potencia (CHA y CHB), ignorando la señal introducida en la entrada del CHB. Esta opción es interesante en el caso de que el amplificador se utilice para alimentar varios altavoces con la misma señal, ya que elimina la necesidad de realizar interconexiones entre canales.

Para su utilización, debe posicionarse el conmutador MODE, en su punto central (PARALLEL). Se activará el led frontal PARALLEL.
Características:
* Una sola entrada para ambos canales (CHA)
* Potenciómetro de Volumen independiente para cada canal
* Ajuste de limitador independiente para cada canal
* Sistema anti-cliping independiente para cada canal

Bridge (Mono)
En esta posición ambos canales se utilizan como un único amplificador, capaz de entregar el doble de la potencia. Para trabajar en este modo, introducir la señal por la entrada del CHA. En la salida de altavoces se utilizará la siguiente conexión:

Para su utilización, debe posicionarse el conmutador MODE, en su punto superior (BRIDGE). Se activará el led frontal BRIDGE
Características:
* Una sola entrada (CHA)
* Un solo potenciómetro de volumen (CHA)
* Un solo ajuste de limitador (CHA)
* Sistema anti-cliping aleatorio (CHA o CHB)

El polo + del altavoz se conectará al pin +1 del Speakon del CH A, o al borne Rojo del CH A. Y el polo – del altavoz, al pin +2 del Speakon del CH A, o al borne Rojo del CH B.

ATENCIÓN: En este modo de funcionamiento se recomienda utilizar una carga de 8 Ω. Si la impedancia de la carga es de 4 Ω, cada módulo trabajará a una carga equivalente de 2 Ω, no se recomiendan instalaciones permanentes en este modo si han de trabajar a plena potencia (ver sección 7. Advertencias). Consultar la tabla de características técnicas para conocer la potencia entregada en modo Bridge.

PRECAUCIÓN: *Puede resultar peligroso manipular los contactos en esta situación por personal no especializado, dada la elevada tensión que se maneja.*

10. Ventilación

Los amplificadores HD Series están dotados de ventilación forzada controlada electrónicamente mediante turbinas situadas en la parte posterior y en cada uno de los módulos de potencia. Disponen de dos velocidades de giro en función de la temperatura, evacuando el aire caliente por la parte delantera (frontal). Es muy importante favorecer la buena circulación de aire para mantener el equipo en un régimen de temperatura de trabajo estable, razón por lo que hay que evitar cualquier posible obstrucción tanto en su parte posterior como la frontal. Asimismo hay que evitar su instalación cercana a fuentes generadoras de calor o carentes de ventilación (armarios cerrados).

ATENCIÓN: *Como la circulación del aire forzado (de atrás hacia delante) puede conllevar la introducción de restos polvorientos y suciedad en general, sobre los carriles de disipación del calor (radiadores) internos, es sumamente recomendable y preciso realizar una operación de limpieza interna, al menos una vez al año dependiendo de las circunstancias particulares de cada instalación o utilización. Cualquier deterioro del amplificador causado por una evidente presencia de suciedad y/o humedad interna, EXCLUIRÁ cualquier derecho de aplicación de la Garantía prevista para este producto.*

11. Funcionamiento y puesta en marcha

Una vez que se ha realizado correctamente el conexionado de red, altavoces y fuentes de sonido (entradas), poner en marcha primero las fuentes previas y a continuación pulsar el interruptor. A continuación giraremos los controles de volumen en el sentido de las agujas del reloj, hasta el nivel de ganancia deseado.

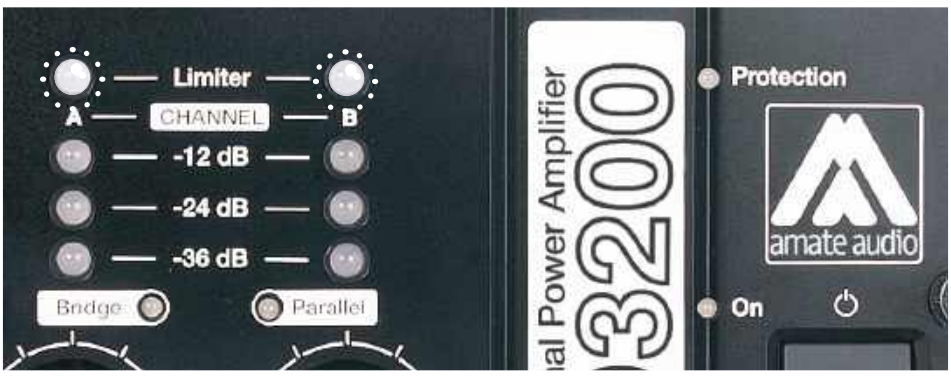
El amplificador consta además de un circuito de arranque suave (Soft-Start), que garantiza una puesta en marcha progresiva sin provocar ruidos ni artefactos extraños en los altavoces.

Para obtener un mejor rango dinámico, es recomendable trabajar siempre con los controles de volumen al máximo y regular la potencia de salida mediante el nivel de la señal a la entrada del amplificador (regulando mediante el mezclador o la fuente sonora correspondiente: crossover, ecualizador, procesador, etc.).

Si se supera el nivel máximo de salida en cualquiera de los dos canales independientes, se activará el led LIMITER del canal correspondiente, advirtiéndonos de que es recomendable bajar el volumen general procedente del mezclador o fuente sonora conectada a ese canal.

12. Clip / Limiter

El circuito anti-clipping evita la presencia de distorsión en la salida de altavoz. Su efecto es inaudible y protege así las bobinas móviles de los altavoces. Su acción se indica individualmente para cada canal mediante un LED en el panel frontal. Si se ilumina intermitentemente indica que el amplificador está trabajando en su límite de potencia y no supone ningún problema.

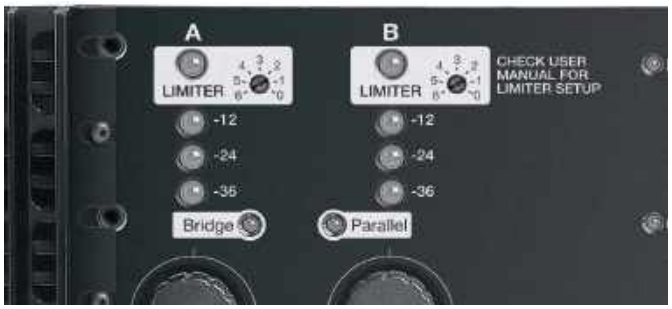


ATENCIÓN: ¡Evítese mantener el LED LIMITER continuamente encendido!
No se obtiene mayor potencia y se pierde dinámica y calidad sonora.

13. Ajustes limitador

Los amplificadores HD en su versión 2014 disponen de una función en la que el usuario puede mediante un sencillo ajuste, independiente por canal, limitar la máxima potencia que desea obtener en cada uno de los dos canales. Este ajuste (limiter adjust), es de fácil acceso y esta situado detrás del panel frontal.

El panel frontal esta fijado con 2 tornillos de M4 con una cabeza grafilada que permite ser aflojados con solo los dedos, sin herramientas, Al retirar el panel frontal encontramos dos secciones de LIMITER, una por canal, en la que hay unos orificios para poder acceder a los potenciómetros, con la ayuda de un pequeño destornillador plano, que nos permitirán ajustar la potencia máxima que queramos obtener en cada uno de los canales.



EL equipo se entrega con estos ajustes totalmente girados en el sentido de las agujas del reloj, entregando de esta manera la máxima potencia posible con la mínima distorsión gracias a su sistema anticliping. Cuando giramos los potenciómetros (ajustes) en sentido inverso, el correspondiente limitador se activara, y reduciendo la potencia al nivel determinado.

Una vez ajustado los limitadores a la potencia deseada volver a colocar el panel frontal fijándolo mediante los 2 tornillos M4 con una cabeza grafilada.

POTENCIA SALIDA CON AJUSTES DE LIMITADOR

LOW LOAD (BRIDGE 4 Ω o STEREO/PARALELL 2 Ω):

ATENCIÓN: Cuando deseamos utilizar los amplificadores en modo BRIDGE @ 4 Ω o STEREO/PARALLEL @ 2 Ω a plena carga para prevenir sobrecalentamientos se recomienda situar la posición del limitador en posicion 2 como se indica en la tabla adjunta (sólo el HD4000 está listo para trabajar en cualquier posición):

BRIDGE MODE 4 Ω		HD800	HD1200	HD2000	HD3200
	BRIDGE MODE 4 Ω	1180 W	1640 W	2200W	4400W
STEREO/PARALLEL MODE 2 Ω		**HD800**	**HD1200**	**HD2000**	**HD3200**
	STEREO/ PARALLEL MODE 2 Ω	590 W	820 W	1100 W	2200 W

STEREO PARALLEL:

En modo STEREO / PARALLEL cada canal tiene un ajuste de limitador independiente; ver la tabla adjunta orientativa de la potencia entregada por canal:

STEREO/PARALLEL MODE		HD800	HD1200	HD2000	HD3200	HD4000
	16 Ω	115 W	210 W	350 W	650 W	390 W
	8 Ω	230 W	420 W	700 W	1300 W	750 W
	4 Ω	450 W	800 W	1300 W	2400 W	1480 W
	16 Ω	76 W	110 W	150 W	320 W	250 W
	8 Ω	152 W	220 W	300 W	600 W	475 W
	4 Ω	295 W	410 W	550 W	1100 W	975 W
	16 Ω	50 W	70 W	90 W	180 W	180 W
	8 Ω	100 W	140 W	180 W	320 W	375 W
	4 Ω	195 W	280 W	350 W	625 W	725 W
	16 Ω	25 W	38 W	50 W	100 W	95 W
	8 Ω	50 W	76 W	100 W	200 W	190 W
	4 Ω	95 W	135 W	200 W	400 W	380 W

BRIDGE:

En modo BRIDGE el único limitador que trabaja es el del canal A, al igual que el potenciómetro de volumen; ver la tabla adjunta orientativa de la potencia entregada según la posición del limiter adjust:

BRIDGE MODE 8 Ω		HD800	HD1200	HD2000	HD3200	HD4000
	8 Ω	900 W	1600 W	2800 W	4800 W	2450 W 4200 W(4Ω)
	8 Ω	590 W	820 W	1100 W	2200 W	1132 W 1950 W (4Ω)
	8 Ω	390 W	540 W	700 W	1250 W	850W 1450W (4Ω)
	8 Ω	190 W	270 W	400 W	800 W	500 W 760 W (4Ω)

Nota (1): Los ajustes de los limitadores y las potencias que pueden entregar los amplificadores con estos ajustes, son siempre relativas ya que los amplificadores HD disponen de un sistema de limitación dinámico capaces de ofrecernos la mejores resultados en función al régimen de trabajo .
Con regímenes de trabajos "severos" el limitador es mas "agresivo" por contra con regímenes de trabajo "por debajo de los normales" el limitador es capaz de proporcionarnos algo mas de potencia. Las condiciones de trabajo para la tabla de ajuste del limitador son de señales de entrada sineburts de 100 Hz 100 ms (0 dB) / 400 ms (-20 dB), dichas condiciones se podrían considerar dentro de las consideradas como "normales".

14. Protecciones

Una instalación inadecuada o algún tipo de anomalía relacionada con la ventilación puede hacer que la temperatura del amplificador rebase los limites de seguridad (> 90ºC), poniendo en peligro sus componentes. En esta situación el sistema de protección por temperatura provocará una reducción de la potencia de salida para equilibrar/reducir la temperatura, sin cortes bruscos de sonido. En caso de que la anomalía persista y la temperatura no baje a los límites de seguridad, se activará una parada durante un tiempo determinado en función de la gravedad de la anomalía detectada, iluminándose el led PROTECTION y LIMITER a la vez y desconectando la salida del canal/es afectado/s.

En los modelos HD2000 y HD3200, antes de realizarse la parada por protección de temperatura, el nivel de salida se reducirá 6dB aproximadamente. Cuando la temperatura vuelva a parámetros normales, el nivel normal de salida se restablecerá.

Cortocircuito

En caso de presencia de una carga muy baja o un cortocircuito (Cruce) en alguna salida de los altavoces, se activará el led LIMITER y se observará una bajada notable del nivel de salida del canal afectado.

Corriente Continua

En el caso de que por alguna anomalía el módulo de potencia intente entregar Corriente Continua (DC) en las salidas de altavoz, un circuito de protección actúa de inmediato para evitar el daño a los altavoces. En este caso se iluminarán PROTECTION y LIMITER a la vez y se desconectará la salida.

Otras causas que impidan el normal funcionamiento del aparato también pueden activar la PROTECCION.
Cuando se activa alguna de las protecciones, es necesario revisar la instalación atendiendo los pasos básicos siguientes:

- Desconectar todos los aparatos periféricos conectados (fuentes, previos y altavoces). Dejar el amplificador "solo" y verificar si la anomalía desaparece o permanece en un solo canal o en los dos.

- Temperatura: Refrigeración (posible obstrucción del aire. Ver estado de los ventiladores –¿funcionan?-. Limpieza interna). Asegurar que el equipo haya vuelto a una temperatura normal antes de volver a poner en marcha.

- Cortocircuito: Estado de la línea de altavoces (posible cruce, desconectarlos y ver si la anomalía desaparece)

- Si no se trata de ninguna de estas causas, consulte con un S.A.T. autorizado.

En todos los casos es conveniente realizar esta primera observación antes de solicitar Servicio Técnico e informar detalladamente sobre el resultado obtenido.

15. Especificaciones

	HD800	HD1200	HD2000	HD3200	HD4000
Amplificación	32 dB				
Sensibilidad de entrada	1 V	1.25 V	1.74 V	2 V	1.88 V
Impedancia de entrada	20 kΩ				
Tiempo de subida	+/-12 V/µs				
Potencia de salida (1 kHz - 0,1% THD) [1]					
Stereo 8 Ω	230 + 230 W	350 + 350 W	600 + 600 W	1000 + 1000 W	650 + 650 W
Stereo 4 Ω	400 + 400 W	600 + 600 W	1000 + 1000 W	1750 + 1750 W	1200 + 1200 W
Stereo 2 Ω	550 + 550 W[2]	850 + 850 W[2]	1500 + 1500 W[2]	2500 + 2500 W[2]	2100 + 2100 W[3]
Bridge 8 Ω	800 W	1200 W	2000 W	3500 W	2840 W
Bridge 4 Ω	1100 W[2]	1700 W[2]	3000 W[2]	5000 W[2]	4200 W[3]
Consumo medio a plena potencia [4]	3 A @ 230 V AC	4 A @ 230 V AC	5 A @ 230 V AC	6 A @ 230 V AC	7 A @ 230 V AC
Respuesta de Frecuencia	20 Hz - 20 kHz (0/-1 dB)				
Factor Damping (1 kHz @ 8 Ω)	280	300	350	400	350
Diafonía	60 dB		65 dB		
Relación S/N (filtro-A)	102 dB (A)	104 dB (A)	105 dB (A)	108 dB (A)	108 dB (A)
Alimentación	220 – 240 V AC- 50/60 Hz				
Dimensiones (AlxAnxPr)	88 x 482 x 420 mm	88 x 482 x 420 mm	88 x 482 x 440 mm	88 x 482 x 440 mm	88 x 482 x 440 mm
Peso	14 kg	15 kg	18 kg	21 kg	21 kg

Nota (1): *Tono pulsante continuo de 20 ms (0 dB) / 480 ms (-20 dB) de acuerdo con EIA RS-490 e IEC 60268-3(IHF A-202).*
Nota (2): *La utilización con impedancia de 2 Ω por canal o 4 Ω bridge a máxima potencia en condiciones adversas de ventilación puede llegar a activar las protecciones de sobretemperatura. La potencia continua a 2 Ω está limitada en tiempo por el fusible térmico rearmable (mains breaker).*
Nota (3): *Específicamente diseñado para la operación en bridge 4 Ω a plena potencia.*
Nota (4): *Consumo medio a plena potencia.*

Especificaciones sujetas a cambio sin previo aviso (abril 2016).

Siguiendo las instrucciones y recomendaciones expuestas, tendremos la seguridad de que el amplificador funcionará siempre dentro de los parámetros establecidos, con lo cual queda asegurada su longevidad y total eficacia.

Certificado de Garantia (documento adjunto)

Las Condiciones y Observaciones para la aplicación del Contrato de Garantía son para todos los territorios del Estado Español.

Para otros países, deberán observarse las particularidades de cada país, siendo el Responsable de su Aplicación el propio Delegado o Importador nacional.

Para cualquier reclamación de tipo Legal, serán únicamente válidos los Tribunales Ordinarios correspondientes a la ciudad de Terrassa (BCN-Spain).

Por favor LEA las instrucciones y condiciones recogidas en la Carta de Garantía para tener pleno.

CERTIFICATION

amate audio
Great sound from Barcelona since 1972

DECLARATION OF CONFORMITY

In accordance with EN 45014:1998

Manufacturer's Name: "AMATE AUDIO S.L."

Manufacturer's Address: C/ Perpinyà 25, Polígon Industrial Nord
08226 Terrassa, (Barcelona), SPAIN

Brand: "AMATE AUDIO"

We declare under our own responsibility that:

Product: Audio Power Amplifier. Audio apparatus for professional use
Name: HD800, HD1200, HD2000, HD3200, HD4000

Conforms to the following product specifications:

Safety: IEC 60065-01 + A1

EMC: EN 55022:2006
EN 55103-1:2009
EN 55103-2 2009
FCC Part 15

WARNING:

In accordance to EN55022, this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Supplementary Information:
The product herewith complies with the requirements of the:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
RoHS Directive 2002/95/EC
WEEE Directive 2002/96/EC

With regard to Directive 2005/32/EC and EC Regulation 1275/2008 of 17 December 2008, this product is designed, produced, and classified as Professional Audio Equipment and thus is exempt from this Directive.

Date of issue: May 1st, 2013

Signature:

AMATE AUDIO S.L.
N.I.F: B59103481
Perpinyà, 25 · Pol. Ind. Norte
Tel: +34 93 735 65 65
08226 – Terrassa
Barcelona – SPAIN

Juan Amate Lopez
General Manager

CE

Conformity Marking

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HD series

High Dynamics Professional Power Amplifiers

Amplificadores profesionales de alta dinámica

amate audio

Great sound from Barcelona since 1972

The **HD** amplifiers have been designed, engineered and manufactured in Barcelona – SPAIN by

Los **amplificadores HD** han sido diseñados y fabricados en Barcelona – ESPAÑA por

---

Amate Audio S.L.

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06v2016

USER'S MANUAL
MANUAL DE USUARIO

HD series

High Dynamics Professional Power Amplifiers
Amplificadores profesionales de alta dinámica

amate audio

Great sound from Barcelona since 1972

In view of the fact that the requirements of audio professionals are increasingly greater, we would like to thank you for choosing a AMATE AUDIO product. At Amate Audio S.L., we have incorporated the highest technology into our products with the conviction that what you have purchased will give you an optimum performance and operation, however adverse the working conditions to which you may submit it.

In order to achieve the best performance and correct operation, it is important that you read the instruction manual carefully before making any connections.

In addition, we recommend that you read the Warranty Certificate enclosed with this Manual in case you may observe any anomaly prior to or immediately after start up, and how to proceed on each case.

INDEX

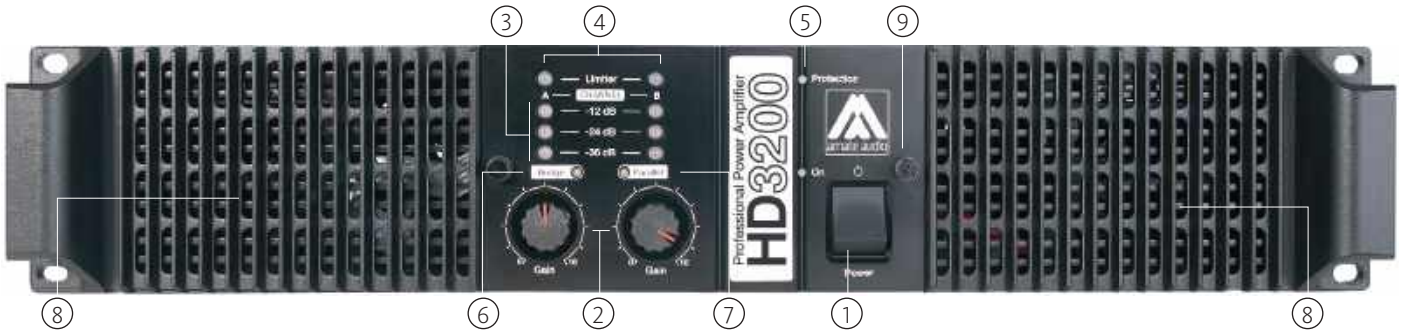
1. General features

Our amplifiers are modular in design. The rigid metal chassis provides easy access to the electronic circuits. Fully independent safety circuits protect the amplifier in the event of a short circuit of the loudspeaker output, abnormal increases in temperature and/or excessive amplifier consumption.

The HD Series amplifiers offer high dynamic performance with moderate average energy consumption, as well as good damping factor, which results in clean response to transients and high quality playback.

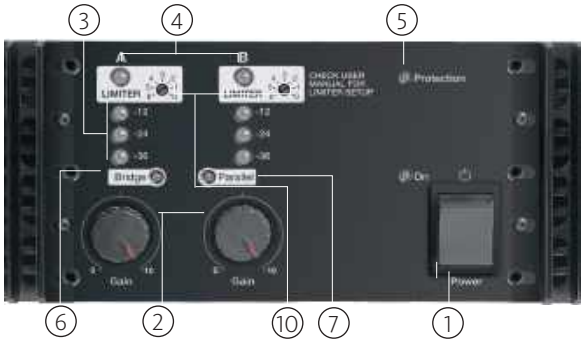
The power modules are integrated in a tunnel-shaped own developed heat sink, which combines high dissipation power with an excellent thermal inertia, thanks to the high extraction effectiveness of the incorporated fans.

2. Front panel features



1) Power Switch – On-Off switch with Led
2) Volume Controls – Potentiometers to independently control the output level for each channel.
3) VU-Meters – Independent output signal indicators, with Leds for different relative levels: -36dB, -24dB & -12dB.
4) Limiter – Led indicating the operation start of the anti-clipping or limiter systems.
5) Protection – Led indicating the operation of any of the protection system of one or both channels. At power up normally it will turn ON momentarily. If it does not turn OFF, indicates a problem of malfunction of the amplifier.
6) Bridge mode – Led indicating the bridge mode.
7) Parallel mode – Led indicating parallel mode.
8) Cooling outs – Forced air output for temperature regulation.
9) Panel screws – Detach (no tools needed) to access the internal panel.

3. Internal view (Front panel out)



10) Limiter adjust – Easy adjustment for the limiter threshold of each output. For more information see Section “Limiter Adjustment”.

4. Rear panel features

1) IEC power connector – Input power supply 230V AC.
2) Breaker – Overcurrent protection.
3) FANS – Forced ventilation turbines. Do not cover.
4) XLR Input A – Electronically balanced for channel A.
5) XLR Link A – Signal link of the A channel (for another amplifier).
6) XLR Input B – Electronically balanced for channel B.
7) XLR Link B – Signal link of the B channel (for another amplifier).
8) Mode selection – Switch: Stereo, Bridge and Parallel mode.
9) Speakon Output A – Loudspeaker output A connection via 2-pole Speakon (+1 -1) or loudspeaker output A+B (A: +1 -1; B: +2 -2) connection via 4-pole Speakon.
10) Binding Posts – Separate outputs of each channel. This connector is connected in parallel with the Speakon Output and they are recommended when requiring separate ways or a wire section greater that the Speakon Output.
11) Speakon Output B – Loudspeaker output B connection via 2-pole Speakon (+1 -1).

5. Connection to the mains

First, it is essential to ensure that the main voltage corresponds to the apparatus voltage. It is not advisable to connect and disconnect the mains wire without first making sure that the switch is in its OFF position.

The amplifier is equipped with an Inrush current limiter circuit, which avoids current excess when powering up. In addition to that, a breaker switch located close to the IEC socket protects the amplifier when the average current consumption is out of the specified range.

AC 220/240 V – 50/60 Hz
AVERAGE CURRENT DRAW
3 A at 1/8 power
6 A at 1/3 power

CAUTION: the connection to any other voltage different from the one specified can damage the amplifier immediately.

6. Connection of the loudspeakers

The loudspeaker system should be connected to the Speakon or binding posts connectors ensuring that the polarity is correct. It is very important to use a cable fitting to the power of the amplifier in order to maintain the high damping factor these units provide.

As a general guideline, we offer a table showing the recommended cable section for different cable length, in order to keep power and damping factor loss in acceptable values.

	Max. recommended cable length	
Cable Section	8 Ohm Load	4 Ohm Load
2.5mm2 (AWG14)	20 m	10 m
4mm2 (AWG12)	30 m	15 m
6mm2 (AWG10)	40 m	20 m
8 mm2 (AWG 8)	50 m	25 m

There are two speaker outputs: CH A and CH B both fitted with Speakon sockets and Terminal type (binding posts) connectors.

The Speakon connector (not included) has 4 terminal poles labeled as +1, -1, +2 and -2. Each pole can fit a maximum wire section of 4mm^2 (12AWG). In mobile applications this connection may also be soldered to guarantee better contact.

The Binding Posts are marked with Red for the Positive Pole, and Black for the Negative Pole. They accept direct cable connection up to 8mm^2 section (8AWG).

The outputs are configured as following for the STEREO and PARALLEL amplifier modes:

Output	Speakon A	Speakon B	Binding Post
+ Ch A	1 +	N.C.	Red (A)
- Ch A	1 -	N.C.	Black (A)
+ Ch B	2 + (*)	1 +	Red (B)
- Ch B	2 - (*)	1 -	Black (B)

For BRIDGE mode, the following output connection is needed:

Output	Speakon A	Speakon B	Binding Post
+ Pole	1 +	N.C.	Red (A)
- Pole	2 +	N.C.	Red (B)

(*) Although it is possible to get the output of both channels with the same connector (Speakon A) when not strictly necessary, it is recommended whenever possible to use one Speakon connector for each output (Speakon A for CHA, Speakon B for CHB). With only two active pins +1 y -1 to avoid undesired signal crosses between positive pins that can damage the amplifier.

7. Warnings

CAUTION high risk of malfunction or mayor damage!

As specified in the previous point, there is the posibility to have both channel outputs (A and B) through the SPEAKON A, this function is very useful when using the amplifier in BRIDGE mode, this is posible because the SPEAKON A uses all the pins (+1 -1 belong to channel A and +2 -2 to channel B).

BE CAREFUL WHEN USING THIS KIND OF CONNECTION, A SHORTCIRCUIT BETWEEN THE POSSITIVE PINS (+1 +2) CAN DAMAGE THE AMPLIFIER OR EVEN THE DESTRUCTUTION OF ONE, OR BOTH, POWER MODULES THIS IS BECAUSE A SHORTCIRCUIT BETWEEN POSITIVE PINS MAKES ONE CHANNEL WORKS AGAINST THE OTHER

Load Capacity: The HD amplifiers have a sufficient current capacity to admit very low loads (down to 2 Ω). It should be taken into account that many loudspeakers using passive filters and whose nominal impedance is of 8 Ω do in fact present impedance much lower than the nominal one at certain frequencies. Therefore, it is advisable to use 2 Ω loads only when one is perfectly aware of the impedance curve of the loudspeaker system to be connected. Otherwise, the amplifier could cause cut-offs at the output due to the short circuit protection (low impedance, <2 Ω) or over heating.

For lower nominal impedance connections (2 Ω STEREO/PARALLEL; 4 Ω BRIDGE) see section 13. Limiter adjustment.

8. Pre-amp connection

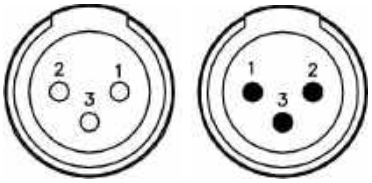
The input (BALANCED INPUTS) enables connection through XLR-3 connectors. The amplifiers incorporate balanced input for a high rejection of noise generated by long signal cables, proximity to electric wires or sources causing them.

BALANCED Inputs/auxiliary outputs:

1. Shield
2.(+) Live
3. (–) Return

UNBALANCED Inputs/auxiliary outputs:

1. Not connected (* See Note)
2. (+) Live
3. Ground



(*) NOTE: *This amplifier follows the ground interconnection specification defined by AES48-2005 standard of the Audio Engineering Society, on grounding and EMC practices for audio equipment containing active circuitry.*
For that reason, when a source with unbalanced outputs should be connected, ***it is recommended not to use Pin1 of the XLR, and never connect it to Pin3****. If a shielded cable is available, the shield may be connected to Pin1 of the XLR to get some shielding, leaving the other end unconnected. Pin1 connection is only advised if the equipment with the unbalanced output has a dedicated connection for the shield, separate from the audio signal ground reference.*

9. Operation modes

Stereo
In Stereo mode, each one of the amplifier channels works independently from the other.

To use Stereo Mode, make sure that the MODE selector, located next to the input section (BALANCED INPUTS) is in the STEREO position (down).

Features:
* Independent input for each channel
* Independent volumen for each channel
* Independent limiter adjustment for each channel
* Independent anti-cliping system for each channel

Parallel
In this mode, the signal inserted at CHA input will be routed to both channel's power modules (CHA and CHB), ignoring the signal at CHB input. This option is useful when a series of speakers must be fed with the same signal, because the signal can be routed saving extra cable connections between inputs.

To use Parallel Mode, place the MODE selector switch in PARALLEL position. The corresponding indicator located on the front panel will light up (PARALLEL).

Features:
* One input for both channels (CH. A)
* Independent volumen for each output
* Independent limiter adjustment for each output
* Independent anti-cliping system for each ouput

Bridge (Mono)
In this position both channels are used as a single amplifier, capable of delivering the double of the power. In this operational mode the input signal must be fed through CHA input connector. At the output, connections must be made as following:

To use Bridge Mode, place the MODE selector switch in Bridge position. The corresponding indicator located on the front panel will light up (BRIDGE).

Features:
* One input (CHA)
* One volumen control(CHA)
* One limiter adjustment (CHA)
* Anti clipping system (CHA or CHB)

The + Pole of the speaker is connected to the Speakon Pin +1 of CH A, or the Red terminal of the CH A. The – Pole of the speaker is connected to the Speakon Pin +2 of CH A, or the Red terminal of the CH B.

IMPORTANT: The recommended load impedance for bridge mode is 8 Ω. If the load impedance is 4 Ω, each power module will work at an effective impedance of 2 Ω, and therefore permanent installations are discouraged in these conditions (see "Warnings" section 7). Please check the specifications table to learn the delivered power in Bridge mode.

CAUTION: *In this situation, it could be dangerous to handle the connections by non-authorized personnel, due to manipulation of high voltage.*

10. Cooling

The HD Series are equipped with electronically controlled forced ventilation, which is carried out by two turbines situated at the rear panel, one in front of each power module. According to the temperature, two different fan speeds are set, and the hot air is evacuated through the front panel. It is very important to favor the good air circulation to keep the equipment in a stable temperature work pattern; therefore any possible obstruction must be avoided both in the rear and front part. In addition, an installation close to heat generator sources or lack of ventilation must be avoided (closed cabinets).

WARNING: *As the forced air circulation (from the back to the front) can produce the introduction of dust and dirt in general over the internal radiators, it is highly recommended to make an internal cleaning operation at least once a year, depending on the particular circumstances of each installation or use.*
Any deterioration of the amplifier caused by an evident presence of dust and/or internal humidity, will EXCLUDE of any right of application of the Warranty for this product.

11. Start-up and operation

Once the mains, loudspeaker and sound sources (input) connections have been made correctly, start up the pre-amp sources and then press the ON/OFF switch. Turn the volume controls clockwise to obtain the maximum gain.

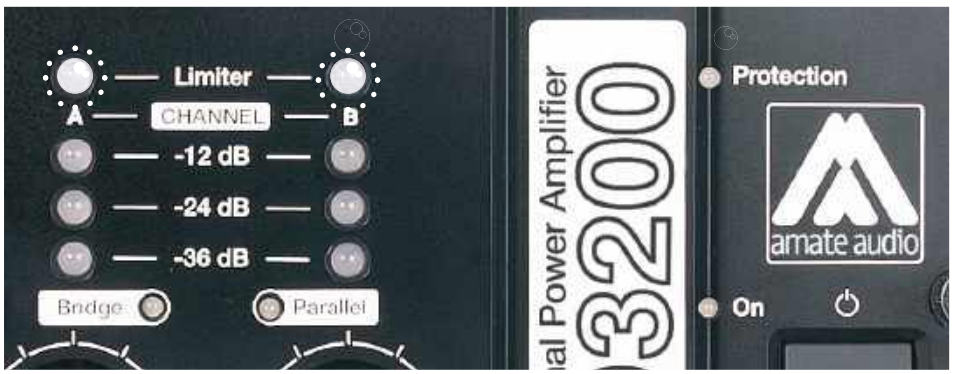
The amplifier is equipped with a Soft Start circuit, which assures a gentle, pop free start up, avoiding stress to the loudspeakers.

In order to obtain the maximum dynamic range from the amplifier, it is recommended to set always the gain controls to the maximum, and control the output power by regulating the signal level at the amplifier's input using the processor gain control (in this condition of the gain controls to the maximum, the amplification is fixed at 32dB per channel).

When the maximum output power has been reached in any of both channels , this will be indicated by the corresponding led LIMITER, advising that it is recommended to lower the general volume coming from the mixer our sound source connected to that channel (previous crossover, equalizer, processor, etc.).

12. Clip / Limiter

This circuit prevents the amplifier from delivering distortion at the loudspeaker outputs. Its action is practically inaudible and protects the loudspeaker voice coils. A LED on the front panel indicates the action of the anti-clipping limiter of each channel. If the clip LED is lit intermittently, this may be interpreted as correct, but it means that the amplifier is reaching its maximum power at this point.

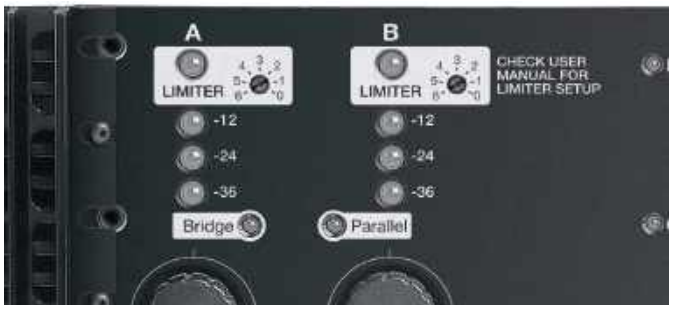


WARNING: Make sure the LED LIMITER is not alight permanently!
No extra power is obtained in this way, loosing dynamics and sound quality.

13. Limiter adjustment

The 2014 version HD amplifiers feature limiter adjustment, in which the user, with an easy adjust, can limit the output power of each output independently. It is an easy access adjustment and it is located behind the front panel.

The front panel is fixed with two M4 screws with knurled head that can be loosen with the fingertips. After removing the front panel you will find two LIMITER sections, one per channel, they can be adjust with a small flat-tip screwdriver.



The factory setting for this parameter is set to fully clockwise, this way the device delivers its maximum power with minimum distortion thanks to its anti-clipping system.

Once the limiter settings have been adjusted, please attach again the front panel with the two M4 screws with knurled head.

OUTPUT POWER TO LIMITER SETTING

LOW LOAD (BRIDGE 4 Ω or STEREO/PARALELL 2 Ω):

CAUTION: when you want to use the amplifier in bridge mode @ 4 Ω or Stereo/parallel mode @ 2 Ω at full power it is recommended to set the limiter in position 2 as shown in the attached table to avoid overheating. (Only HD4000 is ready to work on any position)

BRIDGE MODE 4 Ω		HD800	HD1200	HD2000	HD3200
	BRIDGE MODE 4 Ω	1180 W	1640 W	2200W	4400W
STEREO/PARALLEL MODE 2 Ω		**HD800**	**HD1200**	**HD2000**	**HD3200**
	STEREO/ PARALLEL MODE 2 Ω	590 W	820 W	1100 W	2200 W

STEREO PARALLEL:

In STEREO/PARALLEL mode each channel have an independent limiter adjustment; see the attached table of the delivered output deppending of the limitrer adjustment:

STEREO/PARALLEL MODE		HD800	HD1200	HD2000	HD3200	HD4000
	16 Ω	115 W	210 W	350 W	650 W	390 W
	8 Ω	230 W	420 W	700 W	1300 W	750 W
	4 Ω	450 W	800 W	1300 W	2400 W	1480 W
	16 Ω	76 W	110 W	150 W	320 W	250 W
	8 Ω	152 W	220 W	300 W	600 W	475 W
	4 Ω	295 W	410 W	550 W	1100 W	975 W
	16 Ω	50 W	70 W	90 W	180 W	180 W
	8 Ω	100 W	140 W	180 W	320 W	375 W
	4 Ω	195 W	280 W	350 W	625 W	725 W
	16 Ω	25 W	38 W	50 W	100 W	95 W
	8 Ω	50 W	76 W	100 W	200 W	190 W
	4 Ω	95 W	135 W	200 W	400 W	380 W

BRIDGE:

In BRIDGE mode the limiter adjusment is the one for channel A, the same with the volume adjust, see attached table of the delivered output power depending on the limiter adjustment:

BRIDGE MODE 8 Ω		HD800	HD1200	HD2000	HD3200	HD4000
	8 Ω	900 W	1600 W	2800 W	4800 W	2450 W 4200 W(4Ω)
	8 Ω	590 W	820 W	1100 W	2200 W	1132 W 1950 W (4Ω)
	8 Ω	390 W	540 W	700 W	1250 W	850 W 1450W (4Ω)
	8 Ω	190 W	270 W	400 W	800 W	500 W 760 W (4Ω)

Note (1): The limiter adjustments and power that the amplifiers can deliver with this adjustment are relative, because the HD amplifiers feature a dynamic limiting system able to offers the best results.

The conditions to get the data from the tables has been created using 100 Hz sineburst input signals with 100 ms at 0 dB and 400 ms at -20 dB. This condition is considered as a standard / heavy duty in the Audio Industry.

14. Protections

Temperature

An inadequate installation or any other anomaly related to cooling may cause that the amplifier's temperature exceeds their safe limit (>90ºC), exposing its internal components to failure. The temperature protection would activate the corresponding limiters to reduce (balance) the output power with the overtemperature, in order to keep the amplifier working safely without undesirable stops. In case the temperature keep rising, the corresponding protection circuit will cause a stop during a certain time according to the seriousness of the anomaly detected. The PROTECTION and LIMITER leds will light on at the same time, and the output of the affected channel(s) will be disconnected.

In models HD2000 and HD3200, before the amplifier completely stops because of temperature problems, it will reduce the output level by 6dB approximately. Once the temperature reduce to normal parameters, the normal output level will be reestablished.

Short circuit

In case of very low impedance or short circuit in any loudspeaker output, the LIMITER led is activated and a significant descent of the output level of the affected channel will be observed (loss of volume, but keeps working).

Direct Current

In the case that due to some malfunction the power module tries to deliver direct current (DC) at the output, the protection circuit will immediately disconnect the module to avoid damage to the loudspeakers. In that case, the PROTECTION and LIMITER led's will light on at the same time and the output will be disconnected.

Other causes that could prevent the normal work of the amplifier can also activate the PROTECTION. Under those circumstances, the installation has to be revised according to the basic principles described below:

- Disconnect all the connected peripheral equipments (sources, pre-amplifiers, and loudspeakers). Leave the amplifier "alone" and verify if the anomaly disappears or if it remains in only one channel or both.

- Temperature: Cooling (possible air obstruction. Check if the fans are working and make an internal cleaning).

- Short circuit: Check the state of the loudspeaker line (possible short circuit, disconnect and check if the anomaly disappears).

- C.C. at the output (DC): Possible serious breakdown. Contact an authorized technical service.

In all cases it is recommended to go through all previous checkpoints before contacting the authorized technical service and reporting the observed problem.

15. Technical features

	HD800	HD1200	HD2000	HD3200	HD4000
Voltage Gain	32 dB				
Input Sensitivity	1 V	1.25 V	1.74 V	2 V	1.88 V
Input Impedance	20 kΩ				
Slew Rate	+/-12 V/µs				
Output Power (1 kHz - 0,1% THD) [1]					
Stereo 8 Ω	230 + 230 W	350 + 350 W	600 + 600 W	1000 + 1000 W	650 + 650 W
Stereo 4 Ω	400 + 400 W	600 + 600 W	1000 + 1000 W	1750 + 1750 W	1200 + 1200 W
Stereo 2 Ω [1]	550 + 550 W[2]	850 + 850 W[2]	1500 + 1500 W[2]	2500 + 2500 W[2]	2100 + 2100 W[3]
Bridge 8 Ω	800 W	1200 W	2000 W	3500 W	2840 W
Bridge 4 Ω [1]	1100 W[2]	1700 W[2]	3000 W[2]	5000 W[2]	4200 W[3]
Average Current draw [4]	3 A @ 230 V AC	4 A @ 230 V AC	5 A @ 230 V AC	6 A @ 230 V AC	7 A @ 230 V AC
Frequency Response	20 Hz - 20 kHz (0/-1 dB)				
Damping Factor (1 kHz @ 8 Ω)	280	300	350	400	350
Crosstalk	60 dB		65 dB		
S/N Ratio (A-weighted)	102 dB (A)	104 dB (A)	105 dB (A)	108 dB (A)	108 dB (A)
Mains	220 – 240 V AC- 50/60 Hz				
Dimensions (HxWxD)	88 x 482 x 420 mm	88 x 482 x 420 mm	88 x 482 x 440 mm	88 x 482 x 440 mm	88 x 482 x 440 mm
Weight	14 kg	15 kg	18 kg	21 kg	21 kg

Note (1): *Continuous burst tone 20 ms (0 dB) / 480 ms (-20 dB) in accordance with EIA RS-490 and IEC 60268-3(IHF A-202).*
Note (2): *Driving the amplifier at 2 Ω channel / 4 Ω bridge at full power mode in poor ventilation conditions may cause a thermal overload protection. 2 Ω power is time limited by mains circuit breaker.*
Note (3): *Specifically designed for long term operation in bridge 4 Ω at full power.*
Note (4): *Heavy duty musical program.*

Specifications subjected to change without prior notice (April 2016).

If you follow the instruction manual and recommendations, we are sure that this amplifier will always perform within the predetermined parameters, ensuring its long life and total efficiency.

Certificate of warranty (enclosed document)

The Conditions and Observations for the application of this Contract of Warranty are for all the territories of Spanish.

For other countries, the specifications of each country must be complied with, as only the Representative or National importer themselves can be held responsible for warranty terms.

For any claim of a Legal type, only the Ordinary Courts corresponding to the city of Terrassa (Barcelona-Spain) will be valid.

Please follow the instructions on the last page of this manual. Please READ the instructions and conditions gathered in the Warranty Certificate to fully take advantage of the After-Sales Service.

Amate Audio S.L. le agradece la confianza depositada en la compra de este amplificador. Deseamos informarle de que todos nuestros productos incorporan las más avanzadas tecnologías en todo su proceso de fabricación, así como la más depurada selección de todos sus componentes, lo que nos permite garantizarle un óptimo rendimiento y funcionalidad en cualquiera de las aplicaciones y condiciones de trabajo a las que usted le someta.

No obstante y para obtener su máximo rendimiento y un correcto funcionamiento, es importante leer detenidamente el presente manual de instrucciones antes de cualquier conexión. Asimismo le recomendamos que lea también la Carta de Garantía adjunta a este Manual por si observara cualquier anomalía previa o inmediata a su puesta en marcha y como proceder en su caso.

ÍNDICE

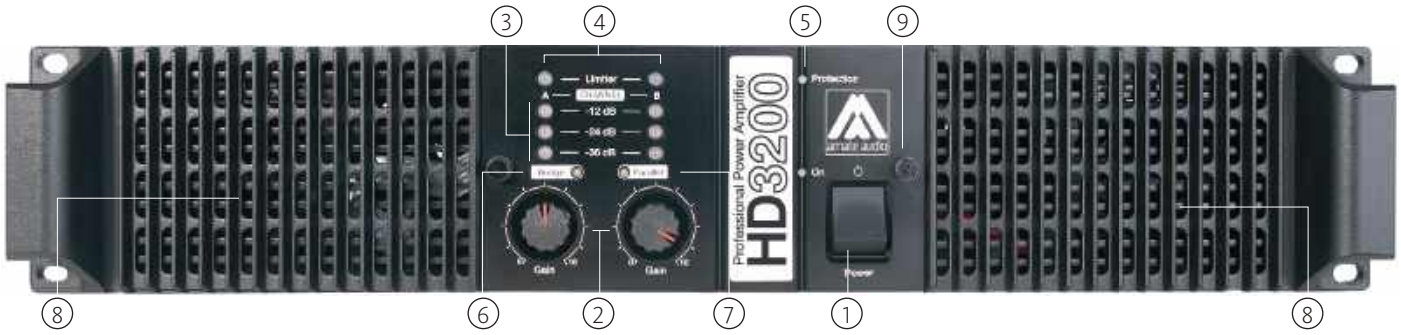
DOCUMENTO ADJUNTO **CERTIFICADO DE GARANTÍA**

1. Características Generales

El diseño de nuestros amplificadores de potencia es modular. El chasis metálico de gran rigidez y el elaborado diseño interior, permiten un fácil acceso a los circuitos electrónicos. Los circuitos de protección, totalmente independientes, protegen al amplificador en el caso de un cortocircuito en la salida de altavoces, un incremento anormal de la temperatura y/o un consumo excesivo del amplificador.

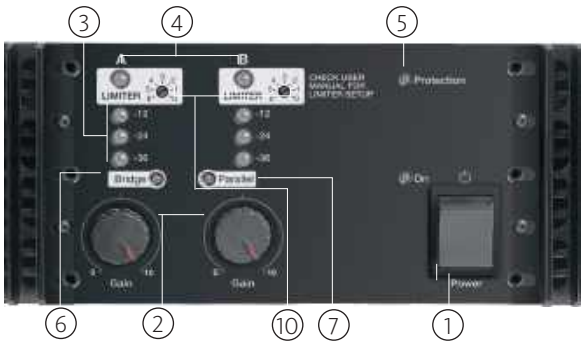
Los amplificadores HD Series poseen una muy elevada potencia dinámica con un moderado consumo energético medio, además de un buen factor damping, lo que se traduce en una limpia respuesta a transitorios y una reproducción de gran calidad. Los módulos de potencia integrados en su correspondiente radiador-túnel, de diseño propio, aúnan un alto poder de disipación de calor con una excelente inercia térmica, gracias a la gran efectividad de extracción que presentan los ventiladores incorporados.

2. Panel Frontal



1) Interruptor de puesta en marcha – Con Led indicador de "On".
2) Control de volumen – Potenciómetros para ajustar el nivel independiente de cada canal.
3) VU-Meters – Indicadores del nivel de salida independientes para cada canal, con leds para indicar los niveles relativos de: -36dB, -24dB y -12dB.
4) Limitador – Led indicador de la función de limitador y anti-clipping.
5) Protección – Led que indica la activación de cualquiera de las protecciones integradas, de uno o ambos canales. En la puesta en marcha es normal que se ilumine brevemente. Si no se apaga, indica un problema en el amplificador.
6) Bridge mode – Led indica modo bridge.
7) Parallel mode – Led indica modo parallel.
8) Salidas de ventilación – Salidas de aire forzado para refrigeración del equipo.
9) Tornillos panel – Desenroscar (sin herramientas) para acceder al panel interno.

3.Panel Frontal interno



10) Ajuste del limitador – Ajuste fácil del umbral del limitador para cada canal. Para más información ver el Capítulo "Ajuste del Limitador".

4. Panel Posterior

1) Conector de red IEC – Entrada de red 230VAC
2) Breaker – Protección de sobrecorriente.
3) VENTILADORES – Turbinas para la ventilación forzada. No cubrir.
4) Entrada XLR A – Balanceada electrónicamente para el canal A.
5) Salida XLR Link A – Link de señal canal A (para otro amplificador).
6) Entrada XLR B – Balanceada electrónicamente para el canal B.
7) Salida XLR Link B – Link de señal canal B (para otro amplificador).
8) Selección de modo – Conmutador: Stereo, Bridge y Parallel.
9) Conector Speakon A – Salida A para conexión de altavoces mediante Speakon de 2 polos (+1 -1) o salida A+B para conexión de altavoces (A: +1 -1; B: +2 -2) mediante Speakon de 4 polos.
10) Bornes – Salidas separadas para cada canal, conectadas en paralelo con las salidas Speakon. Se recomienda utilizar los bornes en caso que se necesiten cables de sección más elevada que la que admite el Speakon.
11) Conector Speakon B – Salida B para conexión de altavoces mediante Speakon de 2 polos (+1 -1).

5. Conexión a la red

En primer lugar es necesario asegurarse de que el voltaje de red corresponde al del equipo.

Es recomendable verificar que el interruptor de puesta en marcha está en posición apagado. El amplificador está dotado de un circuito "Soft-Start" de arranque suave, que limita excesos de corriente en la puesta en marcha. Además, junto a la toma de corriente se encuentra el interruptor Breaker, que protege al equipo en caso que el consumo medio de corriente esté fuera de los parámetros normales.

AC 220/240 V – 50/60 Hz
AVERAGE CURRENT DRAW
3 A at 1/8 power
6 A at 1/3 power

PRECAUCIÓN: La conexión a un voltaje diferente del especificado puede dañar inmediatamente al amplificador.

6. Conexión de altavoces

El sistema de cajas acústicas debe conectarse al conector Speakon o a los bornes, asegurándose de que la polaridad sea la correcta. Es muy importante utilizar el cable adecuado a la potencia del amplificador para mantener el elevado factor damping que estas unidades ofrecen.

A título orientativo, ofrecemos una tabla de valores de la sección mínima recomendada dependiendo de la distancia, para mantener las pérdidas de potencia y de factor damping en valores aceptables.

	Longitud cable max. recomendada	
Sección del cable	Carga 8 Ohm	Carga 4 Ohm
2.5mm2 (AWG14)	20 m	10 m
4mm2 (AWG12)	30 m	15 m
6mm2 (AWG10)	40 m	20 m
8 mm2 (AWG 8)	50 m	25 m

Se dispone de dos salidas para altavoces. Canal A y Canal B, provistas de una base para conector Speakon, y un par de Bornes para cada una.

El conector Speakon necesario (no suministrado con el aparato), dispone de 4 puntos de conexión denominados +1, -1, +2, -2 y admite un máximo de 4 mm^2 de sección (12AWG). Para aplicaciones móviles se recomienda soldar el contacto para asegurar su fijación.

Los Bornes están marcados con el color Rojo para el polo positivo del altavoz y con el color Negro para el polo negativo. Aceptan conexión directa de cable hasta 8mm^2 de sección (8 AWG).

Las salidas están configuradas de la siguiente manera para el modo STEREO o PARALLEL:

Output	Speakon A	Speakon B	Binding Post
+ Ch A	1 +	N.C.	Red (A)
- Ch A	1 -	N.C.	Black (A)
+ Ch B	2 + (*)	1 +	Red (B)
- Ch B	2 - (*)	1 -	Black (B)

Para el modo BRIDGE, utilizar el Speakon A o los Bornes, con la siguiente configuración:

Output	Speakon A	Speakon B	Binding Post
+ Pole	1 +	N.C.	Red (A)
- Pole	2 +	N.C.	Red (B)

(*) Aunque es posible obtener la salida de los dos canales a través de un mismo conector (Speakon A), se recomienda siempre que sea posible utilizar un conector Speakon para cada salida (Speakon A para CHA, Speakon B para CHB); con solo dos polos activos +1 y -1 para poder realizar conexiones libres de cruces entre los polos positivos y de esta manera evitar posibles problemas y averías.

7. Advertencias

ATENCIÓN ¡ALTO RIESGO DE MALFUNCION O AVERÍA¡

Según lo especificado en la configuración conexiones de altavoces; existe la posibilidad de obtener la salida de ambos canales del amplificador en el SPEAKON del canal A, esta función es especialmente útil cuando se esta trabajando en el modo "Bridge", esto es posible por que se utiliza todas las salidas de este conector (las salida +1 -1 corresponden al canal A y las salidas +2 -2 corresponden al canal B)

ROGAMOS SE TENGA ESPECIAL PRECAUCIÓN AL UTILIZAR ESTE TIPO DE CONEXIONADO, UN CRUCE ENTRE LOS POLOS POSITIVOS (+1 Y +2) PUEDE PROVOCAR UNA MALFUNCION, DAÑAR AL AMPLIFICADOR O OCASIONAR GRAVES AVERÍAS COMO LA DESTRUCCIÓN DE UNO, O AMBOS MODULOS DE POTENCIA DEBIDO A QUE UN CRUCE ENTRE LOS POLOS POSITIVOS HACE TRABAJAR UN CANAL CONTRA EL OTRO

Capacidad de carga: Los amplificadores HD Series tienen capacidad de corriente suficiente para aceptar cargas muy bajas (hasta 2 Ω). Hay que tener en cuenta que muchos altavoces de impedancia nominal 8 Ω que utilizan filtros pasivos, a ciertas frecuencias presentan impedancias mucho más bajas de la nominal, por lo tanto, es recomendable usar cargas de 2 Ω solo cuando se conoce perfectamente la curva de impedancia de los sistemas de altavoces a conectar. En su defecto, el amplificador podría provocar cortes en la salida por cortocircuito (baja impedancia, <2 Ω) o por sobre calentamiento.

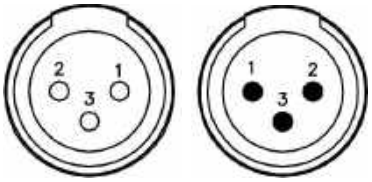
Para conexiones de cargas inferiores a las nominales ver sección 13, ajustes de limitador

8. Conexión de previos

Las entradas (BALANCED INPUTS) permiten la posibilidad de conexión mediante XLR-3. Los amplificadores, incorporan entradas balanceadas para un elevado rechazo de los parásitos generados por cables de señal largos o cercanos a cables eléctricos o fuentes que los provoquen, y garantizar así, una perfecta respuesta en frecuencia.

Entradas y salidas BALANCEADAS:
1. Malla
2. (+) Vivo
3. (–) Retorno

Entradas y salidas NO BALANCEADAS:
1. No conectar (*ver nota)
2. (+) Vivo
3. Malla



(*) NOTA: *Este equipo sigue el esquema de conexionado de masas especificado por el estándar AES48-2005 de la Audio Engineering Society, sobre interconexiones de equipos de audio con circuitos activos.*
Por este motivo, cuando se desea conectar una salida no balanceada al amplificador ***se recomienda no utilizar el Pin 1 del XLR, y en ningún caso conectarlo con el Pin 3****. Si se utiliza cable mallado se puede conectar un extremo de la malla al Pin1 del XLR y dejar el otro extremo sin conectar para conseguir cierto apantallamiento. La conexión del Pin 1 se recomienda únicamente si el equipo con la salida no balanceada tiene una conexión específica para la malla (tierra), separada de la masa o referencia de señal.*

9. Modos de funcionamiento

Stereo
En este modo cada uno de los canales del amplificador funciona independientemente del otro

Para seleccionarlo, asegurarse de que el Selector de MODE, situado junto a la sección de Entradas (BALANCED INPUTS), se encuentra en la posición STEREO.
Características:
* Entrada independiente para cada canal
* Volumen independiente para cada canal
* Ajuste limitador independiente para cada canal
* Sistema anti-cliping independiente para cada canal

Parallel
Esta función envía la señal introducida en la entrada del CHA a los dos módulos de potencia (CHA y CHB), ignorando la señal introducida en la entrada del CHB. Esta opción es interesante en el caso de que el amplificador se utilice para alimentar varios altavoces con la misma señal, ya que elimina la necesidad de realizar interconexiones entre canales.

Para su utilización, debe posicionarse el conmutador MODE, en su punto central (PARALLEL). Se activará el led frontal PARALLEL.
Características:
* Una sola entrada para ambos canales (CHA)
* Potenciómetro de Volumen independiente para cada canal
* Ajuste de limitador independiente para cada canal
* Sistema anti-cliping independiente para cada canal

Bridge (Mono)
En esta posición ambos canales se utilizan como un único amplificador, capaz de entregar el doble de la potencia. Para trabajar en este modo, introducir la señal por la entrada del CHA. En la salida de altavoces se utilizará la siguiente conexión:

Para su utilización, debe posicionarse el conmutador MODE, en su punto superior (BRIDGE). Se activará el led frontal BRIDGE
Características:
* Una sola entrada (CHA)
* Un solo potenciómetro de volumen (CHA)
* Un solo ajuste de limitador (CHA)
* Sistema anti-cliping aleatorio (CHA o CHB)

El polo + del altavoz se conectará al pin +1 del Speakon del CH A, o al borne Rojo del CH A. Y el polo – del altavoz, al pin +2 del Speakon del CH A, o al borne Rojo del CH B.

ATENCIÓN: En este modo de funcionamiento se recomienda utilizar una carga de 8 Ω. Si la impedancia de la carga es de 4 Ω, cada módulo trabajará a una carga equivalente de 2 Ω, no se recomiendan instalaciones permanentes en este modo si han de trabajar a plena potencia (ver sección 7. Advertencias). Consultar la tabla de características técnicas para conocer la potencia entregada en modo Bridge.

PRECAUCIÓN: *Puede resultar peligroso manipular los contactos en esta situación por personal no especializado, dada la elevada tensión que se maneja.*

10. Ventilación

Los amplificadores HD Series están dotados de ventilación forzada controlada electrónicamente mediante turbinas situadas en la parte posterior y en cada uno de los módulos de potencia. Disponen de dos velocidades de giro en función de la temperatura, evacuando el aire caliente por la parte delantera (frontal). Es muy importante favorecer la buena circulación de aire para mantener el equipo en un régimen de temperatura de trabajo estable, razón por lo que hay que evitar cualquier posible obstrucción tanto en su parte posterior como la frontal. Asimismo hay que evitar su instalación cercana a fuentes generadoras de calor o carentes de ventilación (armarios cerrados).

ATENCIÓN: *Como la circulación del aire forzado (de atrás hacia delante) puede conllevar la introducción de restos polvorientos y suciedad en general, sobre los carriles de disipación del calor (radiadores) internos, es sumamente recomendable y preciso realizar una operación de limpieza interna, al menos una vez al año dependiendo de las circunstancias particulares de cada instalación o utilización. Cualquier deterioro del amplificador causado por una evidente presencia de suciedad y/o humedad interna, EXCLUIRÁ cualquier derecho de aplicación de la Garantía prevista para este producto.*

11. Funcionamiento y puesta en marcha

Una vez que se ha realizado correctamente el conexionado de red, altavoces y fuentes de sonido (entradas), poner en marcha primero las fuentes previas y a continuación pulsar el interruptor. A continuación giraremos los controles de volumen en el sentido de las agujas del reloj, hasta el nivel de ganancia deseado.

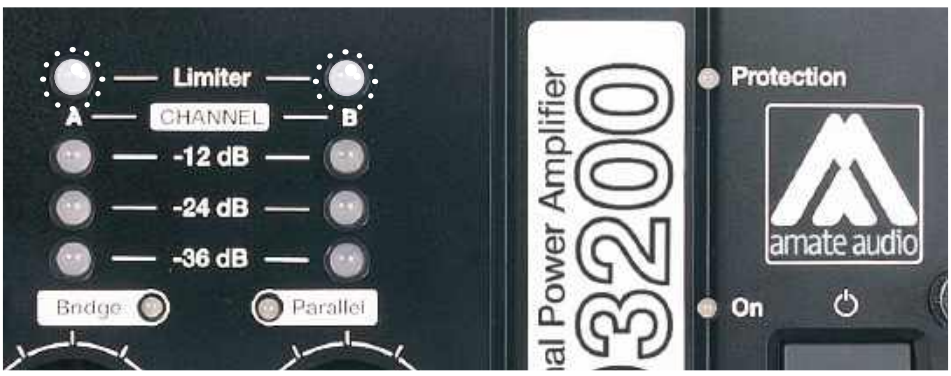
El amplificador consta además de un circuito de arranque suave (Soft-Start), que garantiza una puesta en marcha progresiva sin provocar ruidos ni artefactos extraños en los altavoces.

Para obtener un mejor rango dinámico, es recomendable trabajar siempre con los controles de volumen al máximo y regular la potencia de salida mediante el nivel de la señal a la entrada del amplificador (regulando mediante el mezclador o la fuente sonora correspondiente: crossover, ecualizador, procesador, etc.).

Si se supera el nivel máximo de salida en cualquiera de los dos canales independientes, se activará el led LIMITER del canal correspondiente, advirtiéndonos de que es recomendable bajar el volumen general procedente del mezclador o fuente sonora conectada a ese canal.

12. Clip / Limiter

El circuito anti-clipping evita la presencia de distorsión en la salida de altavoz. Su efecto es inaudible y protege así las bobinas móviles de los altavoces. Su acción se indica individualmente para cada canal mediante un LED en el panel frontal. Si se ilumina intermitentemente indica que el amplificador está trabajando en su límite de potencia y no supone ningún problema.

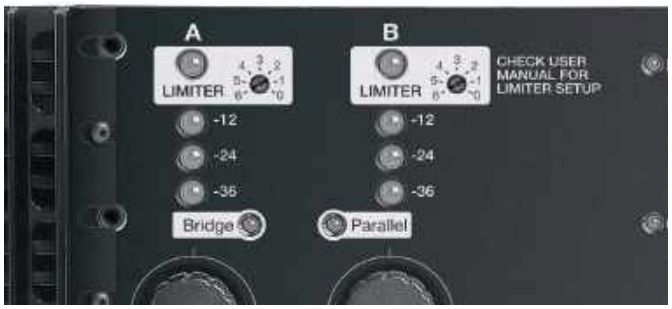


ATENCIÓN: ¡Evítese mantener el LED LIMITER continuamente encendido!
No se obtiene mayor potencia y se pierde dinámica y calidad sonora.

13. Ajustes limitador

Los amplificadores HD en su versión 2014 disponen de una función en la que el usuario puede mediante un sencillo ajuste, independiente por canal, limitar la máxima potencia que desea obtener en cada uno de los dos canales. Este ajuste (limiter adjust), es de fácil acceso y esta situado detrás del panel frontal.

El panel frontal esta fijado con 2 tornillos de M4 con una cabeza grafilada que permite ser aflojados con solo los dedos, sin herramientas, Al retirar el panel frontal encontramos dos secciones de LIMITER, una por canal, en la que hay unos orificios para poder acceder a los potenciómetros, con la ayuda de un pequeño destornillador plano, que nos permitirán ajustar la potencia máxima que queramos obtener en cada uno de los canales.



EL equipo se entrega con estos ajustes totalmente girados en el sentido de las agujas del reloj, entregando de esta manera la máxima potencia posible con la mínima distorsión gracias a su sistema anticliping. Cuando giramos los potenciómetros (ajustes) en sentido inverso, el correspondiente limitador se activara, y reduciendo la potencia al nivel determinado.

Una vez ajustado los limitadores a la potencia deseada volver a colocar el panel frontal fijándolo mediante los 2 tornillos M4 con una cabeza grafilada.

POTENCIA SALIDA CON AJUSTES DE LIMITADOR

LOW LOAD (BRIDGE 4 Ω o STEREO/PARALELL 2 Ω):

ATENCIÓN: Cuando deseamos utilizar los amplificadores en modo BRIDGE @ 4 Ω o STEREO/PARALLEL @ 2 Ω a plena carga para prevenir sobrecalentamientos se recomienda situar la posición del limitador en posicion 2 como se indica en la tabla adjunta (sólo el HD4000 está listo para trabajar en cualquier posición):

BRIDGE MODE 4 Ω		HD800	HD1200	HD2000	HD3200
	BRIDGE MODE 4 Ω	1180 W	1640 W	2200W	4400W
STEREO/PARALLEL MODE 2 Ω		**HD800**	**HD1200**	**HD2000**	**HD3200**
	STEREO/ PARALLEL MODE 2 Ω	590 W	820 W	1100 W	2200 W

STEREO PARALLEL:

En modo STEREO / PARALLEL cada canal tiene un ajuste de limitador independiente; ver la tabla adjunta orientativa de la potencia entregada por canal:

STEREO/PARALLEL MODE		HD800	HD1200	HD2000	HD3200	HD4000
	16 Ω	115 W	210 W	350 W	650 W	390 W
	8 Ω	230 W	420 W	700 W	1300 W	750 W
	4 Ω	450 W	800 W	1300 W	2400 W	1480 W
	16 Ω	76 W	110 W	150 W	320 W	250 W
	8 Ω	152 W	220 W	300 W	600 W	475 W
	4 Ω	295 W	410 W	550 W	1100 W	975 W
	16 Ω	50 W	70 W	90 W	180 W	180 W
	8 Ω	100 W	140 W	180 W	320 W	375 W
	4 Ω	195 W	280 W	350 W	625 W	725 W
	16 Ω	25 W	38 W	50 W	100 W	95 W
	8 Ω	50 W	76 W	100 W	200 W	190 W
	4 Ω	95 W	135 W	200 W	400 W	380 W

BRIDGE:

En modo BRIDGE el único limitador que trabaja es el del canal A, al igual que el potenciómetro de volumen; ver la tabla adjunta orientativa de la potencia entregada según la posición del limiter adjust:

BRIDGE MODE 8 Ω		HD800	HD1200	HD2000	HD3200	HD4000
	8 Ω	900 W	1600 W	2800 W	4800 W	2450 W 4200 W(4Ω)
	8 Ω	590 W	820 W	1100 W	2200 W	1132 W 1950 W (4Ω)
	8 Ω	390 W	540 W	700 W	1250 W	850W 1450W (4Ω)
	8 Ω	190 W	270 W	400 W	800 W	500 W 760 W (4Ω)

Nota (1): Los ajustes de los limitadores y las potencias que pueden entregar los amplificadores con estos ajustes, son siempre relativas ya que los amplificadores HD disponen de un sistema de limitación dinámico capaces de ofrecernos la mejores resultados en función al régimen de trabajo .
Con regímenes de trabajos "severos" el limitador es mas "agresivo" por contra con regímenes de trabajo "por debajo de los normales" el limitador es capaz de proporcionarnos algo mas de potencia. Las condiciones de trabajo para la tabla de ajuste del limitador son de señales de entrada sineburts de 100 Hz 100 ms (0 dB) / 400 ms (-20 dB), dichas condiciones se podrían considerar dentro de las consideradas como "normales".

14. Protecciones

Una instalación inadecuada o algún tipo de anomalía relacionada con la ventilación puede hacer que la temperatura del amplificador rebase los limites de seguridad (> 90ºC), poniendo en peligro sus componentes. En esta situación el sistema de protección por temperatura provocará una reducción de la potencia de salida para equilibrar/reducir la temperatura, sin cortes bruscos de sonido. En caso de que la anomalía persista y la temperatura no baje a los límites de seguridad, se activará una parada durante un tiempo determinado en función de la gravedad de la anomalía detectada, iluminándose el led PROTECTION y LIMITER a la vez y desconectando la salida del canal/es afectado/s.

En los modelos HD2000 y HD3200, antes de realizarse la parada por protección de temperatura, el nivel de salida se reducirá 6dB aproximadamente. Cuando la temperatura vuelva a parámetros normales, el nivel normal de salida se restablecerá.

Cortocircuito

En caso de presencia de una carga muy baja o un cortocircuito (Cruce) en alguna salida de los altavoces, se activará el led LIMITER y se observará una bajada notable del nivel de salida del canal afectado.

Corriente Continua

En el caso de que por alguna anomalía el módulo de potencia intente entregar Corriente Continua (DC) en las salidas de altavoz, un circuito de protección actúa de inmediato para evitar el daño a los altavoces. En este caso se iluminarán PROTECTION y LIMITER a la vez y se desconectará la salida.

Otras causas que impidan el normal funcionamiento del aparato también pueden activar la PROTECCION.
Cuando se activa alguna de las protecciones, es necesario revisar la instalación atendiendo los pasos básicos siguientes:

- Desconectar todos los aparatos periféricos conectados (fuentes, previos y altavoces). Dejar el amplificador "solo" y verificar si la anomalía desaparece o permanece en un solo canal o en los dos.

- Temperatura: Refrigeración (posible obstrucción del aire. Ver estado de los ventiladores –¿funcionan?-. Limpieza interna). Asegurar que el equipo haya vuelto a una temperatura normal antes de volver a poner en marcha.

- Cortocircuito: Estado de la línea de altavoces (posible cruce, desconectarlos y ver si la anomalía desaparece)

- Si no se trata de ninguna de estas causas, consulte con un S.A.T. autorizado.

En todos los casos es conveniente realizar esta primera observación antes de solicitar Servicio Técnico e informar detalladamente sobre el resultado obtenido.

15. Especificaciones

	HD800	HD1200	HD2000	HD3200	HD4000
Amplificación	32 dB				
Sensibilidad de entrada	1 V	1.25 V	1.74 V	2 V	1.88 V
Impedancia de entrada	20 kΩ				
Tiempo de subida	+/-12 V/µs				
Potencia de salida (1 kHz - 0,1% THD) [1]					
Stereo 8 Ω	230 + 230 W	350 + 350 W	600 + 600 W	1000 + 1000 W	650 + 650 W
Stereo 4 Ω	400 + 400 W	600 + 600 W	1000 + 1000 W	1750 + 1750 W	1200 + 1200 W
Stereo 2 Ω	550 + 550 W[2]	850 + 850 W[2]	1500 + 1500 W[2]	2500 + 2500 W[2]	2100 + 2100 W[3]
Bridge 8 Ω	800 W	1200 W	2000 W	3500 W	2840 W
Bridge 4 Ω	1100 W[2]	1700 W[2]	3000 W[2]	5000 W[2]	4200 W[3]
Consumo medio a plena potencia [4]	3 A @ 230 V AC	4 A @ 230 V AC	5 A @ 230 V AC	6 A @ 230 V AC	7 A @ 230 V AC
Respuesta de Frecuencia	20 Hz - 20 kHz (0/-1 dB)				
Factor Damping (1 kHz @ 8 Ω)	280	300	350	400	350
Diafonía	60 dB		65 dB		
Relación S/N (filtro-A)	102 dB (A)	104 dB (A)	105 dB (A)	108 dB (A)	108 dB (A)
Alimentación	220 – 240 V AC- 50/60 Hz				
Dimensiones (AlxAnxPr)	88 x 482 x 420 mm	88 x 482 x 420 mm	88 x 482 x 440 mm	88 x 482 x 440 mm	88 x 482 x 440 mm
Peso	14 kg	15 kg	18 kg	21 kg	21 kg

Nota (1): *Tono pulsante continuo de 20 ms (0 dB) / 480 ms (-20 dB) de acuerdo con EIA RS-490 e IEC 60268-3(IHF A-202).*
Nota (2): *La utilización con impedancia de 2 Ω por canal o 4 Ω bridge a máxima potencia en condiciones adversas de ventilación puede llegar a activar las protecciones de sobretemperatura. La potencia continua a 2 Ω está limitada en tiempo por el fusible térmico rearmable (mains breaker).*
Nota (3): *Específicamente diseñado para la operación en bridge 4 Ω a plena potencia.*
Nota (4): *Consumo medio a plena potencia.*

Especificaciones sujetas a cambio sin previo aviso (abril 2016).

Siguiendo las instrucciones y recomendaciones expuestas, tendremos la seguridad de que el amplificador funcionará siempre dentro de los parámetros establecidos, con lo cual queda asegurada su longevidad y total eficacia.

Certificado de Garantia (documento adjunto)

Las Condiciones y Observaciones para la aplicación del Contrato de Garantía son para todos los territorios del Estado Español.

Para otros países, deberán observarse las particularidades de cada país, siendo el Responsable de su Aplicación el propio Delegado o Importador nacional.

Para cualquier reclamación de tipo Legal, serán únicamente válidos los Tribunales Ordinarios correspondientes a la ciudad de Terrassa (BCN-Spain).

Por favor LEA las instrucciones y condiciones recogidas en la Carta de Garantía para tener pleno.

CERTIFICATION

amate audio
Great sound from Barcelona since 1972

DECLARATION OF CONFORMITY

In accordance with EN 45014:1998

Manufacturer's Name: "AMATE AUDIO S.L."

Manufacturer's Address: C/ Perpinyà 25, Polígon Industrial Nord
08226 Terrassa, (Barcelona), SPAIN

Brand: "AMATE AUDIO"

We declare under our own responsibility that:

Product: Audio Power Amplifier. Audio apparatus for professional use
Name: HD800, HD1200, HD2000, HD3200, HD4000

Conforms to the following product specifications:

Safety: IEC 60065-01 + A1

EMC: EN 55022:2006
EN 55103-1:2009
EN 55103-2 2009
FCC Part 15

WARNING:

In accordance to EN55022, this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Supplementary Information:
The product herewith complies with the requirements of the:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
RoHS Directive 2002/95/EC
WEEE Directive 2002/96/EC

With regard to Directive 2005/32/EC and EC Regulation 1275/2008 of 17 December 2008, this product is designed, produced, and classified as Professional Audio Equipment and thus is exempt from this Directive.

Date of issue: May 1st, 2013

Signature:

AMATE AUDIO S.L.
N.I.F: B59103481
Perpinyà, 25 · Pol. Ind. Norte
Tel: +34 93 735 65 65
08226 – Terrassa
Barcelona – SPAIN

Juan Amate Lopez
General Manager

CE

Conformity Marking

Amate Audio S.L.
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HD series

High Dynamics Professional Power Amplifiers

Amplificadores profesionales de alta dinámica

amate audio

Great sound from Barcelona since 1972

The **HD** amplifiers have been designed, engineered and manufactured in Barcelona – SPAIN by

Los **amplificadores HD** han sido diseñados y fabricados en Barcelona – ESPAÑA por

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Amate Audio S.L.

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www.amateaudio.com

06v2016

www.amateaudio.com

LMS206

Loudspeaker Management System

User's manual

January 2020

Amate Audio S.L.

EXPORT & CUSTOMER SERVICE
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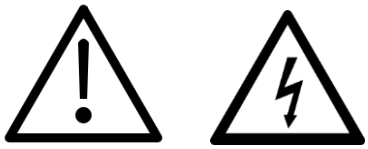
Safety Instructions

1. All safety instructions must be read before using this device.

2. Keep and follow these instructions

3. Heed all warnings



4. The exclamation mark in the triangle indicates internal components which if replaced can affect safety.

5. The lightning symbol within the triangle indicates the presence of dangerous uninsulated voltages.

6. Only clean the device with a dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install the device near heat sources such as radiators, heaters or other heat-emitting elements.

9. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus

10. The equipment must be repaired by qualified technical service personnel when:
A. The mains supply cable is damaged, or
B. Any object or liquid has damaged the device; or
C. The equipment does not function normally or correctly; or
D. The equipment has been exposed to the rain; or
E. The chassis is damaged

11. Disconnect the device in the case of electric storms or during long periods of disuse.

12. WARNING – To reduce the risk of fire or electric shock, do not expose this device to rain or moisture

13. The equipment shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the device.

14. For hanging and installation, use manufacturer recommended accessories only.

1 INTRODUCTION

The **LMS**206 is a complete digital loudspeaker management system designed for the touring or fixed sound installation markets. The absolute latest in available technology is utilized with 64-bit floating point processors and high performance 24-bit Analogue Converters. The high-bit DSP prevents noise and distortion induced by truncation errors of the commonly used 24-bit fixed-point devices. A complete set of parameters include I/O levels, 2 second-delay per channel, polarity, 10 bands of parametric EQ per channel, multiple crossover selections, full function compressor and peak limiter. Precise frequency control is achieved with its 1 Hz resolution. Inputs and outputs can be routed in multiple configurations to meet any requirements.

The **LMS**206 can be controlled or configured in real time on the front panel or with the intuitive PC/Mac GUI accessed via the USB interface. Software upgrade for CPU and DSP via PC keeps the device current with newly developed algorithms and functions once available. Multiple setup storage and system security complete this professional package.

Shipped contents:
- **LMS**206 unit
- AC power cord
- USB cable for PC connection
- 4x Adhesive Rubber feet

2 FEATURES

- Electronically balanced inputs
- Matched-impedance balanced outputs
- 64-bit floating point DSP
- High Performance 24-bit A/D Converters
- 1 Hz Frequency Resolution
- 10 Parametric Equalizers for each Input and Output (EQs can be set as Bell, Notch, High Shelf, Low Shelf, Notch, Allpass, Band Pass, High Pass, Low Pass)
- Multiple Crossover types: Butterworth, Bessel, Linkwitz-Riley, up to 4^{th} order (24dB / oct).
- Up to 2 seconds delay per each input/output
- RMS compressor and ultra-fast attack Peak Limiter.
- Precise Level, Polarity and Delay
- 2-Line x 16 Character Blue Backlit LCD Display
- Signal LED’s on every Input and Output
- Security Lock
- USB Interface for PC/Mac Control and Configuration (on front panel)
- CPU and DSP firmware upgrade via PC/Mac interface
- 2 Inputs and 6 Outputs with flexible routing
- 110dB dynamic range (inputs) / 114dB dynamic range (outputs)
- 48kHz sampling rate
- Low latency (1.32ms)
- Storage of up to 100 Program Setups

3 MAIN CONTROLS AND CONNECTIONS

3.1 The front panel

A) **Mute keys** – Press for Mute/Unmute input and output channels. When a channel is muted, this key will light up in red for indication.

B) **Input signal LEDs** - Show the current level of the Signal: Signal (-48dBu), -6dBu, Limit (orange), Clip (red). The Limit led lights up if a gain reduction is taking place (due to a programmed compressor). The Clip LED references to the device's maximum headroom (+22dBu).

C) **USB Connector** – A standard type B USB connector for interface with a PC or Mac. Software and driver must be installed prior to usage.

D) **Menu Control keys** - There are 6 menu keys: <*Channel* (Previous Channel), *Channel*> (Next Channel), <*Select* (Previous Option), *Select*> (Next Option), *Menu* and *Exit*. The functions of each key is explained below:

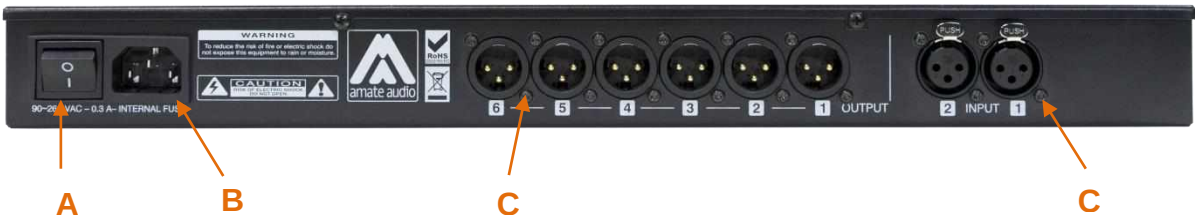
<*Channel:*	Choose previous channel for editing.
Channel>:	Choose next channel for editing
<*Select*:	Select previous parameter for editing
Select>:	Select next parameter for editing
Menu:	This key has different functions depending on when it is used: - In the Main Screen: Access the System Menu. - In the Main Menu allows entering the System Menu.
Exit:	Exit to the Main Menu

E) **LCD** - Shows all the necessary information to control the unit.

F) **Rotary Thumb Wheel** – Turn the wheel to change parameter data values. Click on it to confirm the value entered. The center click of the wheel is also use to browse different parameters of the same feature.

G) **Output signal LEDs** - Show the current level of the output Signal: Signal (-48dBu), -6dBu, Limit (orange), Clip (red). The Limit led lights up if a gain reduction is taking place (due to a programmed compressor). The Clip LED indicates a gain this reduction is higher than 12dB.

3.2 The rear panel



A) **Power switch** - Controls power On/Off.

B) **Main Power** - Connects via a standard IEC socket. A compatible power cord is supplied with the unit. The input voltage range is 85 to 240VAC, 50-60Hz.

C) **XLR input and outputs** - Separate 3-pin XLR connectors are provided for each audio input and output. The device's output stage employs the balanced impedance topology. All I/O connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as -.

4 QUICK INSTALLATION

4.1 Before you start

Before powering up the unit, make sure that the input and output XLR cables are in good state and following the following pinning diagram: 1 for shield, 2 for live(+), 3 for return (-) as defined by the AES14 standard.

Do not connect the unit to your computer before installing the software and the USB Driver. Please refer to installation instructions in this manual.

When connecting the **LMS**206 to the amplifiers, mute the DSP outputs (or turn down the amplifier's volume knobs) until you configure your processing. Loudspeakers may be damaged due to a wrong setup. It is advisable to unmute first the high frequency channels: in case they are connected to low frequency drivers by mistake, they cannot be damaged. Otherwise, high frequency speakers may be damaged because of trying to reproduce low frequencies.

4.2 Power Up

After powering up the unit, all LEDs will be lit for about six seconds, while the following message is displayed on the LCD:

```
Initialising...
```

After that, the DSP unit displays its main screen:

```
AMATE AUDIO
DEFAULT PRESET
```

Now the **LMS**206 unit is ready to operate. The screen shows the name of the unit (above line) and the program name currently active (below line). The program assigned is always the last program the user recalled or stored before powering down the unit.

An admiration mark (!) beside the program name means that the program has been modified but not stored. This symbol does not appear when the modified program is the default preset.

4.3 1 Control Software

The **LMS**206 units can be controlled via a Computer Software which provides a Graphic User Interface (GUI) application - DSPLink. DSPLink allows the user to control the DSP unit from a computer via the USB communication link. For the USB connection, a driver must be installed (included with the DSPLink installation package).

The GUI application makes it much easier to control and monitor the device, allowing the user to get the whole picture on one screen. Programs can be recalled and stored from/to Computer's hard drive, thus expanding the storage to become virtually limitless. See Section 6 of this manual for instructions to operate the software.

DSPLink is available for PC and Mac. Check Amate Audio's website for a latest version download (www.amateaudio.com).

Installation for PC-Windows:
Double click the installation file, depending whether you have a 32 or a 64-bit system:
Amate_Audio_DSPLink_32_bit_v_10_X_X_BuildNr.msi
Amate_Audio_DSPLink_64_bit_v_10_X_X_BuildNr.msi
Follow the on-screen instructions. You may be prompted to install the Microsoft Visual Runtime libraries before finishing the installation. Click the checkbox to proceed with this action.

Installation for Mac:
First unzip the provided installation file:
Amate_Audio_DSPLink_v_10_X_X_BuildNr.mpkg.zip
Then select the .mkpg file with CONTROL+Click and select "Open". Then follow the on-screen instructions.

4.4 Connecting the device to a computer

WARNING: Always install the software package DSPLink before connecting your unit to the computer. See previous section for details.

After installing DSPLink, please use the provided USB cable to connect the unit to your computer. The first time you connect a device, the system will ask you to look

for the driver. Choose the option “do not look for updates and to automatically select the best driver”.

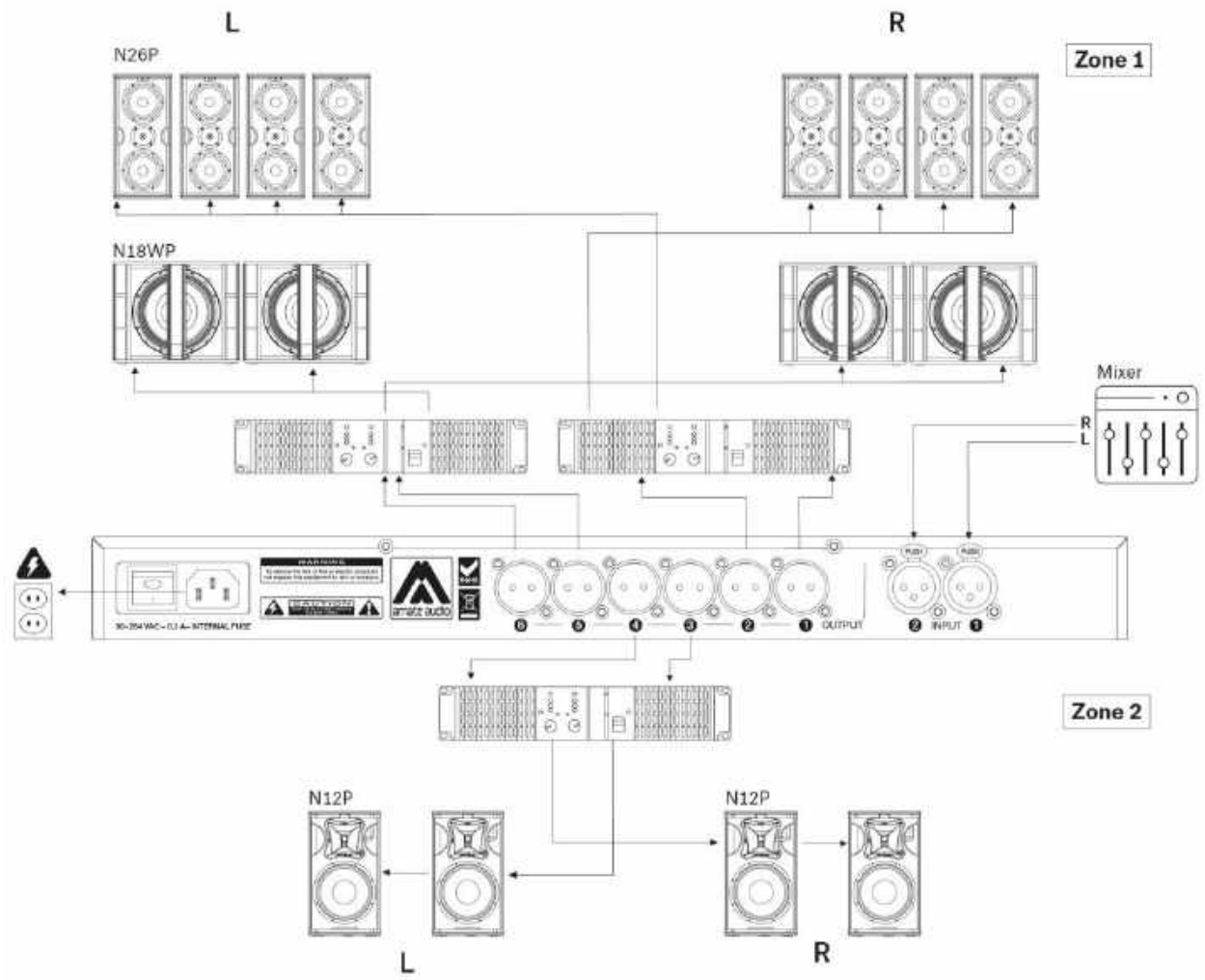
Run DSPLink and the unit will be automatically detected. Click on the arrow next to the detected unit to open the window for parameter edition.

4.5 System Optimization

In order to have a proper start of your system and an optimized configuration, follow these steps by the first configuration:

1. Play a signal at the nominal level from your mixing desk, and set the input gain of your processor to 0dB (Default Preset setting)
2. Set the crossovers that you want to use, while keeping the output gains also at 0dB.
3. With DISCONNECTED loudspeakers, turn up the volume of the power amplifiers entirely clockwise (full volume).
4. Reduce the output gain and / or the output limiter setting to get the desired gain, so that the amplifier is just clipping and the built-in limiters of your processor are just limiting (Orange led blinking at the output channels).
5. Turn down the volume of the power amplifiers, connect your speakers, and slowly increase the volume while checking the sound.
6. Check if the loudspeakers are reproducing distortion-free sound, and the limiter LEDs are flashing or off, but not continuously on. If they are continuously on, reduce the output gain of your processor.
7. If you cannot reach enough signal level, increase the processor's input gain or turn up the level from your mixing desk

4.6 Diagram of a typical setup



With illustrative purposes, a diagram of a **LMS**206 working as audio manager in a typical setup is shown above. The audio processor is used for splitting the stereo signal coming from a mixer in two zones for different public. In fixed setups, is common that these two zones have different acoustical properties so different audio gear is expected. Due the previous considerations, a different signal processing for each zone is expected.

5 OPERATING THE DEVICE

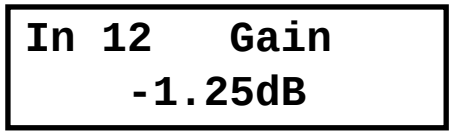
5.1 Input Menus

To access the Input Menus press the <*Channel* or *Channel*> key. Press *Exit* to finish editing or again <*Channel* or *Channel*> to edit other channels.

The following menus are available for each input channel. Please note that by default the inputs and outputs channels are linked in groups of two. The following options are shown for the input group composed of In1 and In2

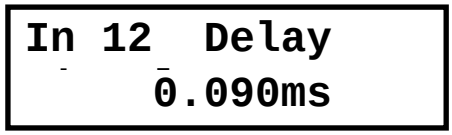
5.1.1 Input Gain

Adjust the gain of each input, using the rotary knob.



5.1.2 Delay

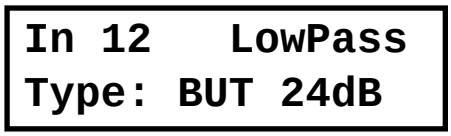
Adjust the delay by turning the rotary knob. Push this knob to switch the unit between ms, ft or m.



5.1.3 Crossover

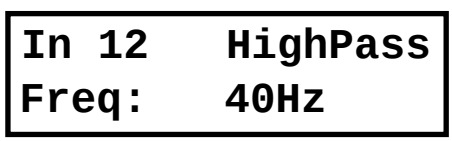
• **Low Pass** – First adjust the Low Pass Filter cut-off frequency. To switch it off, turn the rotary knob clockwise until “Off” is displayed.

Second, press the rotary knob and select from the available types and slopes:
Type: Butterworth, Slopes: 6dB, 12dB, 18dB or 24dB
Type: Bessel. Slopes: 6dB, 12dB, 18dB or 24dB
Type: Linkwitz-Riley. Slope: 12dB or 24dB



• **High Pass** – First adjust the High Pass Filter cut-off frequency. To switch it off, turn the rotary knob counter-clockwise until “Off” is displayed.

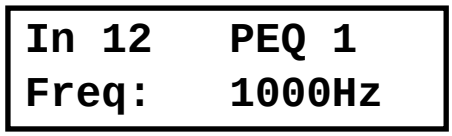
Second, press the rotary knob and select from the available types and slopes:
Type: Butterworth, Slopes: 6dB, 12dB, 18dB or 24dB
Type: Bessel. Slopes: 6dB, 12dB, 18dB or 24dB
Type: Linkwitz-Riley. Slope: 12dB or 24dB

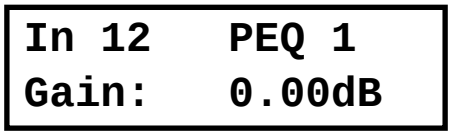


5.1.4 Parametric EQ

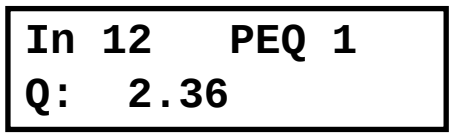
Select between one of the 10 available Equalizers on each input channel by using the keys < *Select* and *Select* >. Browse the parameters by turning the rotary knob and push the knob to select and confirm the values. The following parameters can be adjusted for each EQ:

• **Freq** - EQ center frequency.
• **Gain** - EQ level gain.

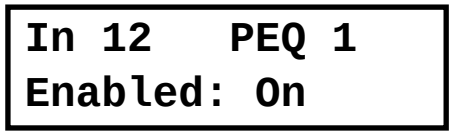




• **Q** - EQ Bandwidth. For shelving filters the Q sets the transition in dB/Oct. See Annex[1] for further information about the Q factor implementation in the **LMS**206.
• **Type** - Shape of EQ. The available types are:
Bell: Modifies the gain of a certain frequency range, with bell shape
Notch: Eliminates a range around a center frequency
Low-Shelf: Modifies the gain of all the range below a selected frequency.
High-Shelf: Modifies the gain of all the range above a selected frequency.
All Pass: Modifies the phase response, without influencing the frequency response.
Band Pass: Filters out all the range except the defined band.
High Pass: Filters out all the range below a certain frequency.
Low Pass: Filters out all the range above a certain frequency.



• **Enabled** – When set On, the currently selected EQ is on line.



5.1.5 Dynamics Compressor

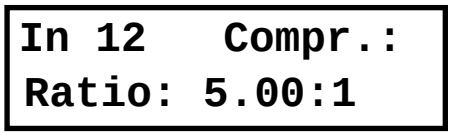
A true RMS compressor can be set to avoid the input signal go above a certain RMS value. The following parameters can be adjusted:

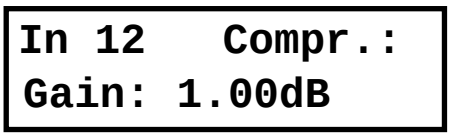
• **Thr.** - Compressor Threshold. Sets the level at which the compressor will activate.
• **Att.** - Attack time. Time it takes the compressor to start actuating after reaching the threshold.

• **Hold** - Hold time. Sets up a delay before the compressor enters the release cycle. Useful for compressing low frequency long notes.

• **Rel.** - Release time. Time the compressor uses to return to unity gain after the signal is below the threshold.

• **Ratio** - The compressor ratio determines the slope in which the signal is compressed. The higher this value is, the higher the compression.
• **Gain** – The compressor make up Gain. Use it in case the level of the compressed signal must be corrected (0dB by default)

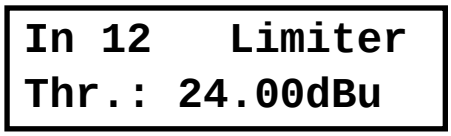


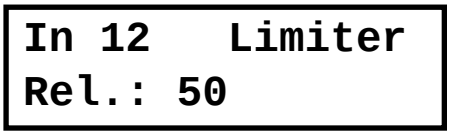


5.1.6 Limiter

A peak-limiter can be set at each input. It is a zero attack time limiter, so it will immediately act on the signal. The parameters that can be changed are:

• **Thr.** – Threshold: input level at which the signal will be limited.
• **Rel.** – The release value, expressed in dB/seconds





5.1.7 Channel Link

Input channels 1 and 2 can be linked in order to set the same parameters on both. The factory setting is that channel 1 and 2 are linked. Turn the rotary knob set the link off.

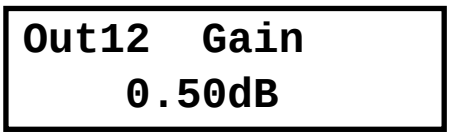
5.2 Output Menus

To access the Input Menus press the <*Channel* or *Channel*> key. Press Exit to finish editing or again <*Channel* or *Channel*> to edit other channels.

The following menus are available for each output channel. Please note that by default the inputs and outputs channels are linked in groups of two. The following options are shown for the output group composed of Out1 and Out2.

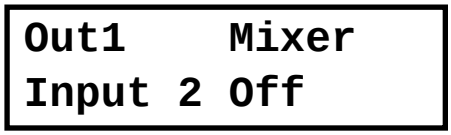
5.2.1 Input Gain

Adjust the gain of each output, using the rotary knob.



5.2.2 Mixer

Select the level to be routed from each input by turning the rotary knob. Select 0dB for maximum level of an input. To disable one input, turn the rotary knob counter-clockwise until “Off” is displayed. Push the rotary knob to select the next input.



5.2.3 Delay

Adjust the delay by turning the rotary knob. Push this knob to switch the unit between ms, ft or m.

5.2.4 Crossover

• **Low Pass** – First adjust the Low Pass Filter cut-off frequency. To switch it off, turn the rotary knob clockwise until until “Off” is displayed.

Second, press the rotary knob and select from the available types and slopes:
Type: Butterworth, Slopes: 6dB, 12dB, 18dB or 24dB
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Type: Linkwitz-Riley. Slope: 12dB or 24dB

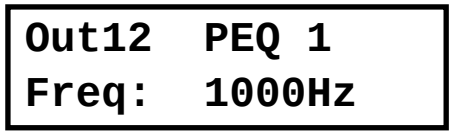
• **High Pass** – First adjust the High Pass Filter cut-off frequency. To switch it off, turn the rotary knob counter-clockwise until “Off” is displayed.

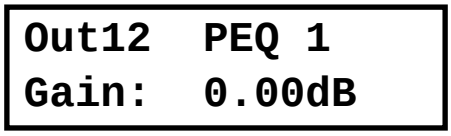
Second, press the rotary knob and select from the available types and slopes:
Type: Butterworth, Slopes: 6dB, 12dB, 18dB or 24dB
Type: Bessel. Slopes: 6dB, 12dB, 18dB or 24dB
Type: Linkwitz-Riley. Slope: 12dB or 24dB

5.2.5 Parametric EQ

Select between one of the 10 available Equalizers on each output channel by using the keys < *Select* and *Select* >. Browse the parameters by turning the rotary knob and push the knob to select and confirm the values. The following parameters can be adjusted for each EQ:

• **Freq** - EQ center frequency.
• **Gain** - EQ level gain.





• **Q** - EQ Bandwidth. For shelving filters the Q sets the transition in dB/Oct. See Annex[1] for further information about the Q factor implementation in the **LMS**206.
• **Type** - Shape of EQ. The available types are:
Bell: Modifies the gain of a certain frequency range, with bell shape
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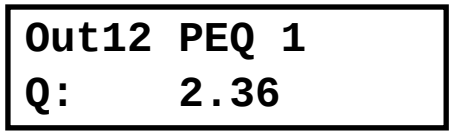
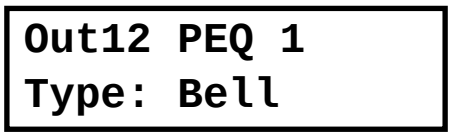
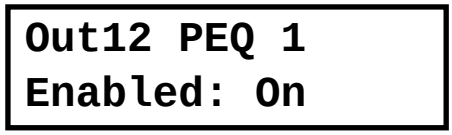
High-Shelf: Modifies the gain of all the range above a selected frequency.
All Pass: Modifies the phase response, without influencing the frequency response.
Band Pass: Filters out all the range except the defined band.
High Pass: Filters out all the range below a certain frequency.
Low Pass: Filters out all the range above a certain frequency.





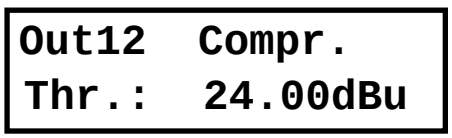
• **Enabled** – When set On, the currently selected EQ is on line.

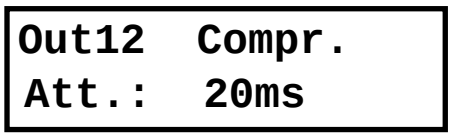


5.2.6 Dynamics Compressor

A true RMS compressor can be set to avoid the output signal go above a certain RMS value. The following parameters can be adjusted:

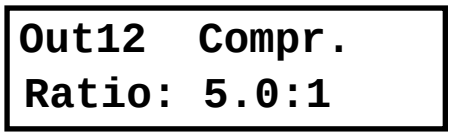
• **Thr.** - Compressor Threshold. Sets the level at which the compressor will activate.
• **Att.** - Attack time. Time it takes the compressor to start actuating after reaching the threshold.

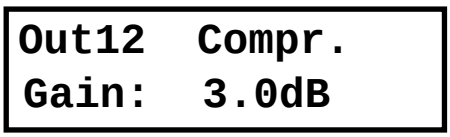




• **Hold** - Hold time. Sets up a delay before the compressor enters the release cycle. Useful for compressing low frequency long notes.
• **Rel.** - Release time. Time the compressor uses to return to unity gain after the signal is below the threshold.

• **Ratio** - The compressor ratio determines the slope in which the signal is compressed. The higher this value is, the higher the compression.
• **Gain** – The compressor make up Gain. Use it in case the level of the compressed signal must be corrected (0dB by default)

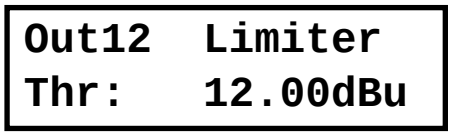




5.2.7 Limiter

A peak-limiter can be set at each output. It is a zero attack time limiter, so it will immediately act on the signal. The parameters that can be changed are:

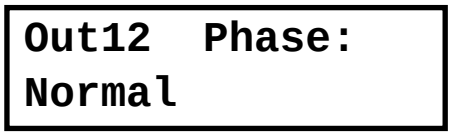
• **Thr.** – Threshold: input level at which the signal will be limited.
• **Rel.** – The release value, expressed in dB/seconds



For Amate Audio passive cabinets, there is a tool that easily computes the correct value of the limiter threshold for each output. These values are the result of a deep study made in out R+D facilities, thus its use guarantee protection without compromising the performance of the system. This tool is available at www.amateaudio.com/en/LimCal.

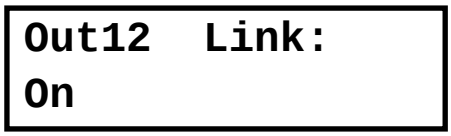
5.2.8 Phase – Phase inversion

Change the polarity of the channel by a 180º phase inversion. Select between Normal or Inverted.



5.2.9 Channel Link

Output channels can be linked in order to set the same parameters on both. The factory setting is that output channels 1&2, 3&4, 5&6 are linked. Turn the rotary knob set the link off.



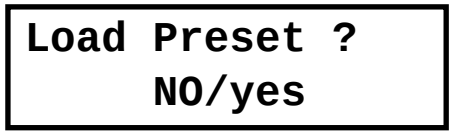
5.3 System Menu

The System Menu allows the user to control and change parameters that are related to the system behaviour and general operation. It can be accessed by pressing the *Menu* key on the front panel. The available options are:

5.3.1 Load - Program Recall

The **LMS**206 unit has a built-in non-volatile memory that can store different program setups. A program can be recalled using this menu. Use the rotary knob to browse the desired program to load and click it to accept

Confirm your selection by turning the rotary knob until “YES” is in capital letters and press enter again.



5.3.2 Save - Program Store

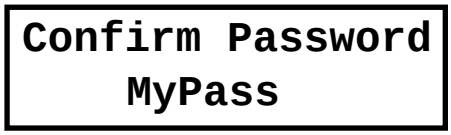
A program can be stored using this menu. The old program with the same program number will be replaced. Once the program is stored in the flash memory, it can be recalled at a later time, even after power down.

Select the number of slot where the current setting will be stored by rotating the thumbwheel and pressing it to confirm. After that, it is required to enter a name for the new preset, using the rotary wheel to select the characters and the center click to confirm:

Once you finish typing the name of the preset, press again the *Menu* key to confirm. Press the rotary knob to select “YES”. A confirmation message is displayed.

5.3.3 Access Level – Lock the front panel through a password

To lock the system, turn the rotary knob until the word “Locked” is displayed. The system will prompt for a password.



The password may be up to 8 characters long. When entering shorter passwords, use the *Menu* key to finish and confirm. Use the *Exit* key to go back and make the password shorter.

WARNING: If blank spaces are included in the password, they will be stored and must be entered in the same position in order to unlock the device.
NOTE: The factory default password is “Password”

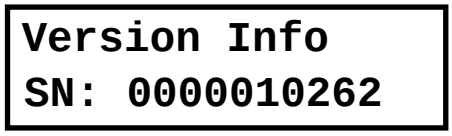
After that the system will be LOCKED and only the Mute buttons and the Menu key will be active.

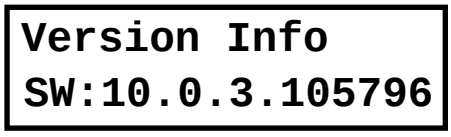
To UNLOCK the device, proceed with the following steps:
Press the menu key. The Lock screen will appear. Turn the rotary knob counterclockwise to select “Unlocked”

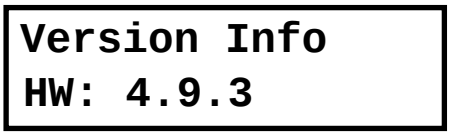
Then enter the password. Click enter to finish.

5.3.4 Version Info

Shows the device software and hardware information. Turn the rotary knob to display the information available:







6 PRESETS

The **LMS**206 is shipped with several presets pre-loaded in the unit that help in the set-up of the sound system. These presets have been designed and selected for deliver an active loudspeaker response (with internal amplification) when using them with our passive cabinets, as well for positive interfering in low frequency range and for protecting the sound system in over-voltage case.

In the following diagram, the list of the presets is displayed:

Nº	Tipo	Nombre	OUT1 a OUT4	OUT 5 & 6
1	Read-Only	N6P	N6P / FLAT	N6P / FLAT
2	Read-Only	N6P & N12WP	N6P / XOVER	N12WP / LPF90+3
3	Read-Only	N26P	N26P / FLAT	N26P / FLAT
4	Read-Only	N26P & N12WP	N26P / XOVER	N12WP / LPF90+3
5	Read-Only	N12P	N12P/ FLAT	N12P/ FLAT
6	Read-Only	N12P & N18WP	N12P / XOVER	N18WP / LPF90+3
7	Read-Only	N12PR	N12PR / FLAT	N12PR / FLAT
8	Read-Only	N12PR & N18WPR	N12PR / XOVER	N18WPR/LPF90+3
9	Read-Only	N15P	N15P / FLAT	N15P / FLAT
10	Read-Only	N15P & N18WP	N15P / XOVER	N18WP / LPF90+3
11	Read-Only	N15P & N218WP	N15P / XOVER	N218WP/LPF90+3
12	Read-Only	N15PR	N15PR / FLAT	N15PR / FLAT
13	Read-Only	N15PR & N18WPR	N15PR / XOVER	N18WPR/LPF90+3
14	Read-Only	KEY10	KEY10 / FLAT	KEY10 / FLAT
15	Read-Only	KEY10 & N12WP	KEY10 / XOVER	N12WP / LPF90+3
16	Read-Only	KEY10 & N18WP	KEY10 / XOVER	N18WP / LPF90+3
17	Read-Only	KEY12	KEY12 / FLAT	KEY12 / FLAT
18	Read-Only	KEY12 & N18WP	KEY12 / XOVER	N18WP/ LPF90+3

In the case of set-ups without subwoofer units, the presets configure the passive loudspeakers as full-range loudspeakers so they will reproduce all the frequency range.

For the case of set-ups with subwoofers, the output channels from 1 to 4 (Corresponding to the “tops”) are configured with a high pass filter, and the channels 5 to 6 (Corresponding to the “subs”) are configured with a low pass filter and a boost of 3 dB in the tuning frequency. In this way we obtain a set-up with a balanced frequency response.

These presets are read-only, in consequence they can’t be overwritten, edited nor deleted. If you want to edit a preset, before is necessary to copy it to another free memory available.

The presets don’t include the proper limiter threshold, since it depends in the number of cabinets and amplifier type that are part of the sound system. For computing the proper limiter threshold, it is highly recommended to use the tool we have available in the following link: amateaudio.com/en/LimCal

7 OPERATING THE SOFTWARE

7.1 Device List

Once the software DSPLink is started, a window with the list of connected devices is shown. The main controls are as following:

 MUTE: The device will be completely muted when this button is clicked. Click it again to unmute.

 IDENTIFY: When pressing this button, the device will blink 5 times its leds on the front panel. Useful for installations with several DSP connected to the computer, in order to identify each unit.

 STANDBY: When this button is clicked, the DSP will go into standby mode (low power consumption). In this mode, there is no output signal. Click the button again to recover the normal operation mode.

 EDIT: Open control window for full control of the device.
The following options are available in this window:

- **File / Quit**: Close the program.
- **Tools**
  - **Change software password**: allows the user to create a password to access the software. By default, no passwrod is needed. If a password is set and then forgotten, the software must be reinstalled.
  - **New Group**: create a group that associates 2 or more DSP.
  - **Enter Demo Mode**: enables to use the software without a connected device.
  - **Enable Update**: Enables the firmware upgrade of the units in the list (an Administrator password is required, see Section 8).
- **Help**
  - **Request Support**: sends a report about a problem in the software,
  - **About**: Shows basic info about the application

7.2 Device Options

7.2.1 Main window

In this window the Preset options, the device name, and the input and output levels and VUMeters, as well as the link and mute settings are displayed.

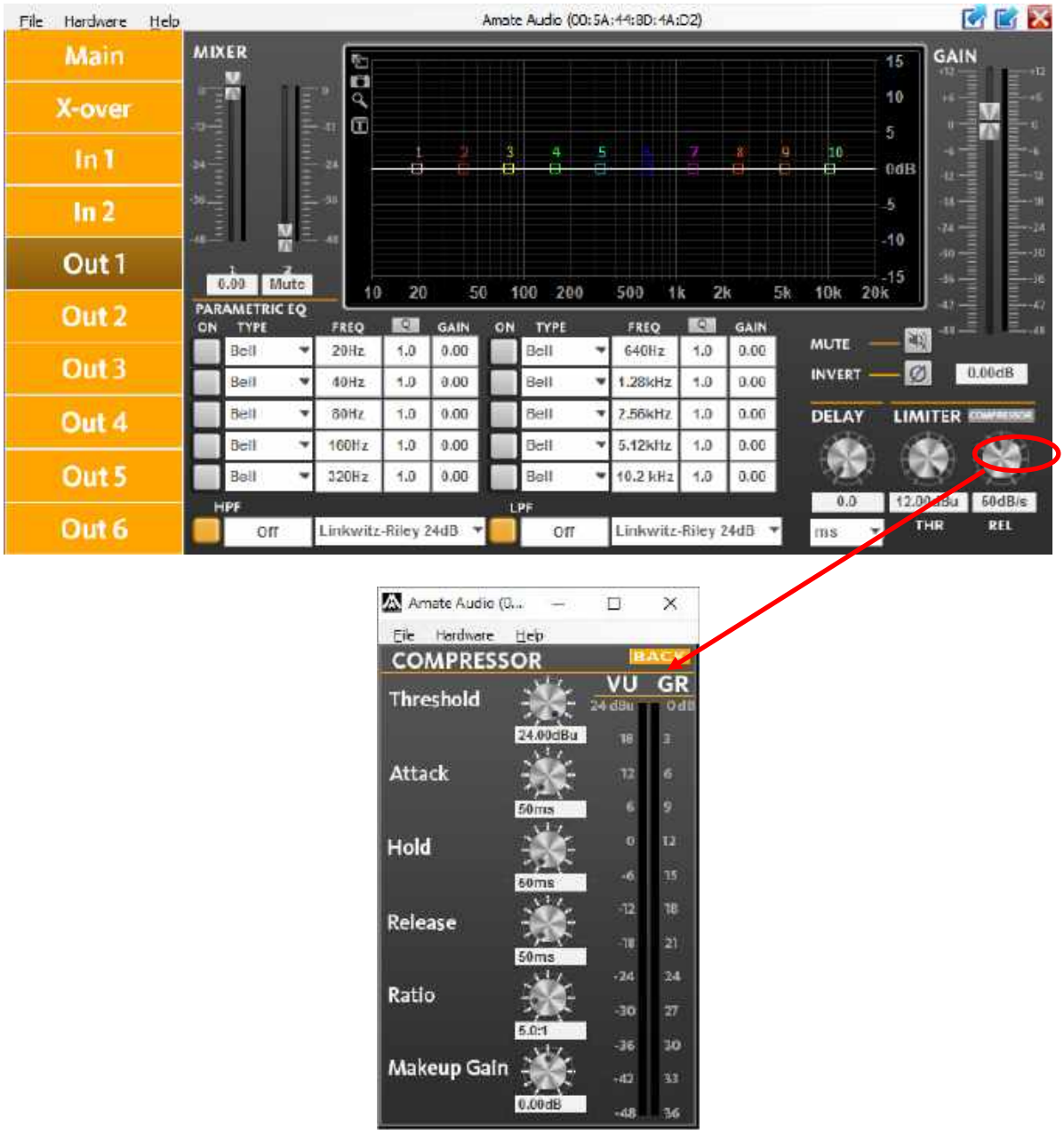
7.2.2 X-over window

In this window all the crossover settings for each output are displayed and can be set. The same information can be found on each channel's window.

7.2.3 Input / Output window

When selecting one of the inputs or outputs on the left side, a window with all available controls will be displayed: Mixer, PEQ, Xover, Gain, Mute, Polarity, Limiter and Compressor.

To access all available parameters of the Compressor, click on the word "COMPRESSOR" besides the Limiter control. A new window will display showing the controls for Threshold, Attack, Hold, Release, Ratio and Makeup Gain.



7.2.4 File Menu

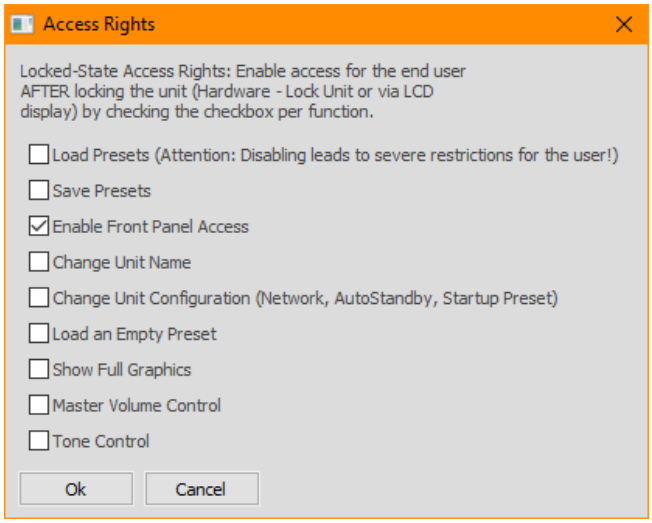
- **Open**: Load a preset from a previously stored file.
- **Save**: Save current preset to a file in the hard disk.
- **Restore Presets**: Load a set of presets from a previously stored file.
- **Backup Presets**: Backup all the presets of the device to the hard disk.
- **Quit**: Exit the device's main window.

7.2.5 Hardware Menu

- **Enter Password**: Enter a password here to unlock the unit (only needed if the unit has been previously locked using the option "Hardware>Lock Unit").
- **Configure**:
    - **Change password**: change the factory default password. The new password may have up to 8 characters. You will be first asked for the

old password. **NOTE**: The factory default password is “Password” (case sensitive)

- **Power On Preset**: Set here the preset that will be selected at startup. The default setting is “last setting”.
- **Global Access Rights**: select which controls will be unlocked even the “Lock Unit” control is selected. Click on the checkbox of the functions that should be available to the user without entering a password:



- **Output mode**: pre-select the input assignment to outputs, in groups of two (Dual Bridge or Mono).

- **Lock unit**: In order to lock the unit by password, select “Hardware > Lock Unit”. To unlock the unit again, select “Hardware > Enter Password”.

- **Set Pin**: Set a 4-digit pin to allow the access to the unit via software. If the PIN needs to be removed, select this function and leave the PIN field blank (the message “Invalid PIN” will be shown). If the PIN is forgotten, a firmware upgrade is needed (see Chapter 9).

- **Status Details**: A quick information window about the device is displayed.

8 QUICK REFERENCE

Menu Function	Channel	Parameter	Value	Units
Gain	I / O	Gain	-48 to +12; Step: 0.25	dB
Mixer	Outputs	Input 1/2/3/4	-48 to 0; Step: 0.25	dB
Delay	I / O	Delay	0 to 2000; Step depends on range	ms
LowPass / High Pass	I / O	Freq.	20 to 20000; Step depends on range	Hz
		Type	BUT 6dB / BES 6dB / BUT12 dB / BES 12 dB / LR 12 dB / BUT 18 dB / BES 18dB / BUT 24dB / BES24 dB / LR 24dB	
		Enabled	On / Off	
PEQ 1 to PEQ 10	I / O	Freq.	20 to 20000; Step depends on range	Hz
		Gain	-12 to 12; Step: 0.25	dB
		Q	0.2 to 25; Step: 0.1	
		Type	Bell / Notch / High Shelf / Low Shelf / Allpass/ Band Pass/ High Pass/ Low Pass	
		Enabled	On / Off	
Compres-sor	I / O	Thr.	-48 to +24; Step: 0.25	dBu
		Att.	1 to 10000; Step: 1	ms
		Hold	1 to 10000; Step: 1	ms
		Release	1 to 10000; Step: 1	ms
		Ratio	1.2:1 to 25:1	
		Makeup Gain	-12 to +12; Step: 0.25	dB
Limiter	Input	Thr.	-48 to +24; Step: 0.25	dBu
		Rel.	10 to 100; Step: 1	dB/s
Limiter	Output	Thr.	-48 to +12; Step: 0.25	dBu
		Rel.	10 to 100; Step: 1	dB/s
Phase	Output	Phase	Normal / Inverted	
Link	I / O	Link	Off / On	

9 TROUBLESHOOTING

9.1 How to perform a firmware upgrade

To perform a firmware upgrade, proceed as following:

WARNING: In the Firmware Upgrade Process all your presets will be erased. Please make a backup of them before upgrading the unit. During the upgrade process you will be asked to perform this backup.

1. Connect the unit to the computer
2. Using DSPLink, enter the Device Main Window
3. Choose “Hardware > Enter Password”
4. Enter the administrator password, which is “Ad_min”
5. Go to “Hardware > Firmware Upgrade”
6. Be careful to answer “Yes” if you want your settings and presets to be backed up
7. Wait until firmware is upgraded. Do not plug off or disconnect the unit from the computer during this process.
8. Your presets will be restored automatically

9.2 Password recovery

The unit is shipped unlocked, so no password will be necessary unless the unit is locked by the user. The default user password is “Password”.

In case this Password has been changed by the user (Using the Menu “Hardware > Configure > Change Password”) and is no longer remembered, a Firmware Upgrade is needed to re-establish the password to the default value (see previous section).

10 SPECIFICATIONS

	DSP206
Analog Inputs	
Number	2
Input Impedance	>10 kOhms
Maximum Level	+23 dBu
Type	Electronically balanced
Analog Outputs	
Number	6
Maximum Level	+12 dBu
Type	Impedance Matched
Audio Performance	
Frequency Response	20Hz to 20kHz (+/- 0.5dB)
Input Dynamic Range	110 dB (unweighted)
Crosstalk	< -80 dB
Distortion	0.005% (A-weighted)
Digital Audio Performance	
Processing	64-bit
Analog Converters	High Performance 24-bit
Sampling Rate	48 kHz
Propagation Delay	1.32 ms
Front Panel Controls	
Display	2 x 16 Character. White Backlit LCD
Level Meters	Per I/O: Signal Present, -6dB; Limiter, Clip
Buttons	Illuminated Mute Controls, Menu Controls
Dial Encoder	Rotary Thumb Wheel
Connectors	
Analog Audio	3-pin XLR Pin 1: shield 2: live (+) 3: return (-)
USB	Type B (on front panel)
Power	Standard IEC Socket
General	
Power	85 to 240 VAC (50 / 60 Hz)
Dimensions (H x W x D)	1U 19” Rack 44 x 483 x 165 mm
Weight	2.3kg
System Parameters	
No. of Programs	100
Program Names	16 character length
Security Lock	Password Lock/Unlock

Note: Specifications subject to change without notice

11 ANNEX

[1] For bell parametric filters (PEQ), the bandwidth definition differs among the different DSP manufacturers. For this reason, it is difficult to successfully copy filter settings between different processors.

The frequency span of the filter is defined by either the bandwidth or the Q factor. These parameters are inversely proportional, meaning the bigger the bandwidth, the smaller the Q. The formulas relating both parameters are:

$$Q = \frac{f_0}{f_H - f_L} = \frac{f_0}{B}$$

$$B = f_H - f_L$$

The border frequencies of the bandwidth are usually set at the point where the energy decreases three decibels, as shown in *Figure 1*.

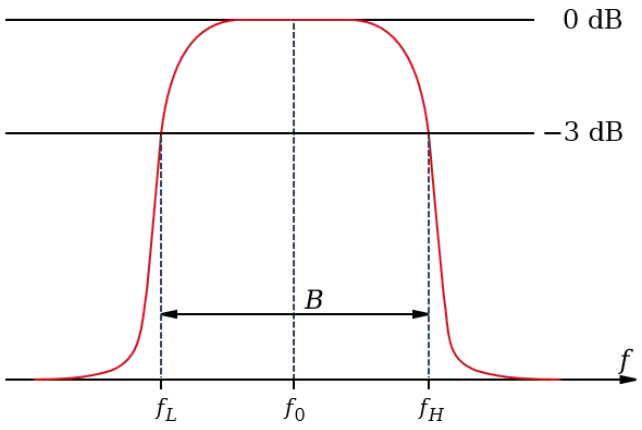


Fig. 1: Bandwidth graphical representation

The majority of audio processor manufacturers implement the Q in four different ways: Bandpass-Q, Constant-Q, dB/2 and 3dB hybrid method. The first two are based in analogue filters, while the last two take advantage of the capabilities of digital processing.

The Bandpass-Q method builds the bell filter adding the response of a band-pass filter plus a gain block to the input signal, as shown in Figure 2.

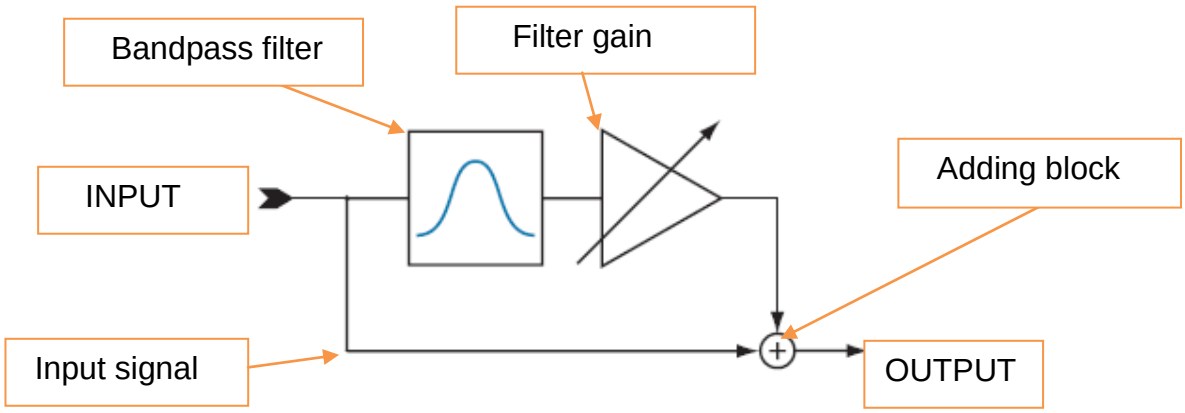


Fig. 2: Block diagram of a bell filter

As shown in Fig. 2, when adding both processed and original signals at the output, the bandwidth of the resulting signal is higher than the bandwidth of the bandpass filter used. The Bandpass-Q method defines the Q of the bandpass filter block, and not of the resulting filter. The difference is shown in Figure 3.

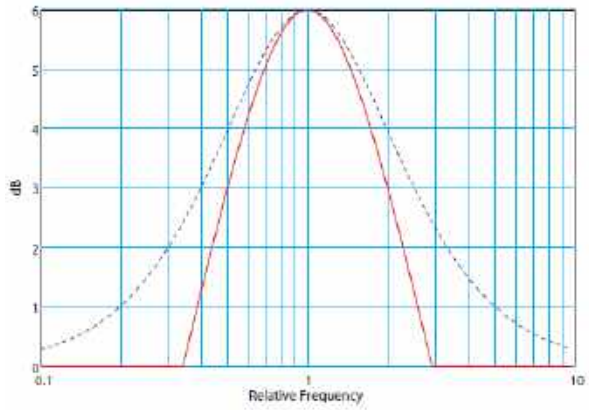


Fig. 3. Red line: Bandpass filter with 6dB gain. Dotted blue line: Parametric bell filter.

To avoid this difference, Constant-Q implementations lower the Q that the user selects in the bandpass filter, just enough to compensate this difference. In consequence, the resulting Q at the output is the same as the user expects. However, this solution cannot be applied for filters with a peak gain lower than 3dB.

The dB/2 method always sets the bandwidth as one-half of the peak gain, so the definition works no matter what the peak gain is. Amate Audio **LMS**206 uses the dB/2 method, because it keeps the bell shape independent from the peak gain.

The 3dB Hybrid Method works in two ways: If the peak gain is greater than 6dB, the bandwidth is set at -3dB of the peak (Constant-Q), otherwise it uses the dB/2 definition, setting the bandwidth to one-half of the peak gain.

CERTIFICATION

www.amateaudio.com

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Great sound from Barcelona since 1972

DECLARATION OF CONFORMITY

In accordance with EN 45014:1998

Manufacturer's Name: "AMATE AUDIO S.L."

Manufacturer's Address: C/ Perpinyà 25, Polígon Industrial Nord
08226 Terrassa, (Barcelona), SPAIN

Brand: "AMATE AUDIO"

We declare under our own responsibility that:

Product: Audio signal processor. Audio apparatus for professional use
Name: LMS206

Conforms to the following product specifications:

Safety: IEC 60065-01 + A1

EMC: EN 55022:2006
EN 55103-1:2009
EN 55103-2 2009
FCC Part 15

WARNING:

In accordance to EN55022, this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Supplementary Information:
The product herewith complies with the requirements of the:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
RoHS Directive 2002/95/EC
WEEE Directive 2002/96/EC

With regard to Directive 2005/32/EC and EC Regulation 1275/2008 of 17 December 2008, this product is designed, produced, and classified as Professional Audio Equipment and thus is exempt from this Directive.

Date of issue: April 30th, 2019

Signature:

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