User's manual

TPD3K

July 2021

CAUTION
RISK OF ELECTRIC SHOCK
DON'T OPEN

WARNING:
To reduce the risk of fire or electric shock do
not expose this equipment to rain or moisture

Safety Instructions

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

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

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

4. This device must not be exposed to rain or humidity.

5. Only clean the device with a dry cloth.

6. Do not situate the equipment where its ventilation system might be interfered with.

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

8. 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

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

10. 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.

11. Only use manufacturer recommended accessories.

1 INTRODUCTION

Amate Audio would like to thank you for the trust placed in our **TPD3K** Digital Signal Processing Amplifier. We have incorporated the highest technology into this product with the conviction that 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 Equipment in case you may observe any anomaly prior to or immediately after start up, and how to proceed on each case.

The **TPD3K** is an amplifier with built-in digital loudspeaker management system designed for compact sound installation markets.

A 2000 W @ 4 Ohm Class D amplifier for low frequency (subwoofer) plus 2x750 W @ 4 Ohm Class D amplifiers for mid-high frequency offer an all-in-one flexible, reliable and powerful option for most loudspeaker installations including subwoofers.

An internal DSP with 6 output channels (3 internal, 3 external) provides all the possibilities for fully processing a loudspeaker (X-over, PEQ, Delay, Limiter, Gain).

The **TPD3K** 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:

- **TPD3K** unit
- AC power cord
- USB cable for PC connection

2 MAIN FEATURES

2.1 Amplifier features

The **TPD3K** amplifier is modular in design. The rigid metal chassis provides easy access to the electronic circuits. 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 **TPD3K** amplifier offers high dynamic performance with extremely good efficiency, as well as good damping factor, which results in clean response to transients and high quality playback.

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

Other features include:

- Separate input XLR, electronically balanced for each channel (Left & Right)
- Limiter and indicators VU for each way (channel)
- Eco mode: the amplifier enters in low consumption mode after some minutes of absence of signal at the input. It will automatically power on as soon as there is sound to reproduce.
- Three loudspeaker outputs: Subwoofer (SW), Left (L) and Right (R) via binding posts or Speakon.
- Three auxiliary balanced outputs with processed signal. They can be linked to the internal processing of each channel (SW, L and R) or configured independently.

2.2 DSP features

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.

The available features are:

- 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 4th 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 Backlit LCD Display with black background.
- Security Lock (with user or administrative rights)
- USB Interface for PC/Mac Control and Configuration (on front panel)
- CPU and DSP firmware upgrade via PC/Mac interface
- 110dB dynamic range (inputs) / 114dB dynamic range (outputs)
- 48kHz sampling rate
- Low latency (1.32ms)
- Factory presets for Amate Audio loudspeakers and for most common configurations.

3 MAIN CONTROLS AND CONNECTIONS

3.1 The front panel

Fig. 1. Front panel view

A) **Standby Switch** – Press this switch to set the system in standby mode (red led lit). Press again to set the unit in normal mode (white led lit).

B) **Cooling outs** – Forced air output for temperature regulation.

C) **Protection** – Led indicating the operation of any of the protection systems of one or both channels. At power up (or recovering from standby or eco mode) it will turn ON for a few seconds. If it does not turn OFF, indicates a problem of malfunction of the amplifier.

D) **EcoMode** – Led is lit when the low power consumption mode is on (will automatically happen after a few minutes without input signal). To wake up the amplifier, signal must be fed to the inputs.

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

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

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

H) **Menu Control keys** - There are 6 menu keys, with the following functionality:

<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

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

J) **Rotary Thumb Wheel** – Click and turn to change the overall input gain (volume) of the system. Inside the menus, turn the wheel to change parameter data values and click on it to confirm the value entered. The center click of the wheel is also used to browse different parameters of the same feature.

K) **Output signal LEDs** - Show the current level of the output Signal: Signal (-48dBu), -6dBu, Limit (orange), The Limit led lights up if a gain reduction is taking place (due to a programmed compressor).

3.2 The rear panel

Fig. 2. Rear panel view

A) **Power switch with thermal breaker** - Controls power On/Off. Automatic switch off if overconsumption takes place.

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) **Speakon Output (SW, L, R)** – Loudspeaker output connections via 2-pole Speakon. Recommended output for connecting the amplifier with the acoustic system.

D) **Binding Posts** – Separate outputs of each channel. This connector is connected in parallel with the Speakon Output and they are recommended when requiring a wire section greater that the Speakon Output.

E) **FAN** – Forced ventilation turbine. Do not cover.

F) **XLR inputs (L, R) -** Electronically balanced

G) **XLR auxiliary outputs (processed)** - Separate 3-pin XLR connectors are provided for each auxiliary output. The device's output stage employs the balanced impedance topology.

4 INSTALLATION

4.1 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 85/240V – 50/60Hz
Average current draw @230V: 1.5 A Musical Program
                                5 A Heavy Duty

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

4.2 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 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.

Section	Max. recommended cable length	
	8 Ohm Load	4 Ohm Load
2.5mm^2 (AWG14)	20 m	10 m
4mm^2 (AWG12)	35 m	15 m
6mm^2 (AWG10)	55 m	25 m
8 mm^2 (AWG 8)	70 m	35 m

Table 1. Maximum recommended cable length

The following speaker outputs are available:

Speakon sockets: Each pole can fit a maximum wire section of 4mm^2 (AWG12).

- SUBWOOFER (SW): Loudspeaker output connection for the subwoofer channel.
- LEFT (L): Loudspeaker output connection for Left channel satellites.
- RIGHT (R): Loudspeaker output connection for Right channel satellites.
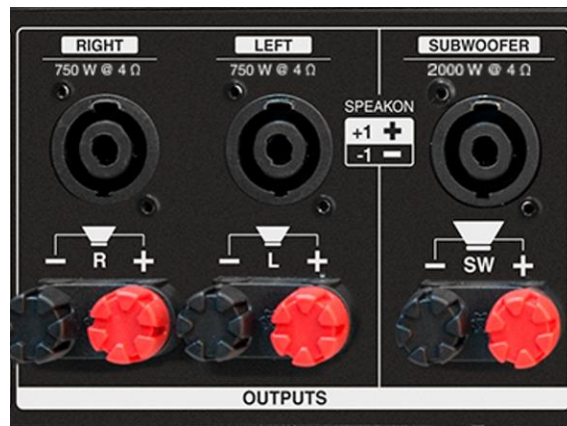
Fig. 3. Available loudspeaker connectors on the rear panel

Binding Posts: They accept direct cable connection up to 8mm^2 section (8AWG). The Binding Posts are marked with Red for the Positive Pole, and Black for the Negative Pole. Separate outputs are available for each channel: 2 binding Post (RED/BLACK) for SW, 2 for L and 2 for R.

The outputs are configured as following:

Output		SW	L	R
SPEAKON	Positive	+1 (live)	+1 (live)	+1 (gnd)
	Negative	-1 (live)	-1 (gnd)	-1 (live)
Binding Post	Positive	RED	RED	RED
	Negative	BLACK	BLACK	BLACK

Table 2. Configuration of loudspeaker connections

⚠ **WARNING: high risk of malfunction or major damage!**
As specified in the previous point, there is the possibility to use simultaneously the different outputs, such as SPEAKON and the Binding Posts. Please make sure to check that the total load connected to each channel is not below 4 Ohm, since all outputs are connected in parallel.

Be extremely careful when performing the connections, as a shortcircuit between any of the "live" pins (see **Table 2**) can damage the amplifier or even cause the destruction of one or both power modules.

4.3 Connection of the inputs/auxiliary outputs

The inputs and auxiliary outputs enable connection through XLR-3 connectors. The amplifier incorporates balanced inputs for a high rejection of noise generated by long signal cables, proximity to electric wires or sources causing them.

The auxiliary outputs enable the interconnection of other amplifiers to the **TPD3K** internal processor, which enables 3 independent processing channels.

XLR3 - IN

XLR3 - OUT
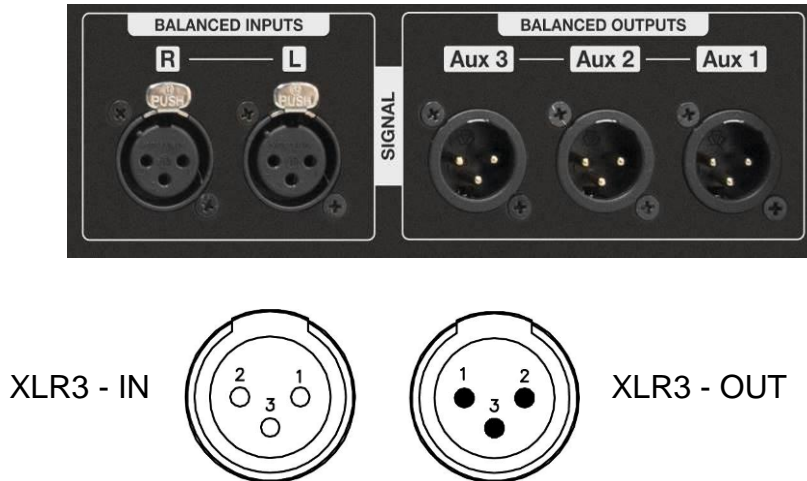
BALANCED Inputs/auxiliary outputs
1. Shield
2. (+) Live
3. (–) Return

UNBALANCED Inputs/auxiliary outputs:
1. Not connected (* See Note)
2. (+) Live
3. Ground

Fig. 4. Available signal inputs and outputs

(*) 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.

Before powering up the unit, make sure that the input and output XLR cables are in good state and following the above described pinning diagram, as defined by the AES14 standard.

When connecting the XLR, please mute the outputs with the front panel switches until you configure the signal processing. Loudspeakers may be damaged due to a wrong setup. It is advisable unmute first the L and R channels: in case they are connected to a subwoofer driver channel by mistake, it cannot be damaged. Otherwise, high frequency speakers may be damaged because of trying to reproduce low frequencies. When the L and R channels are properly connected, proceed to unmute the subwoofer channel.

5 OPERATING THE AMPLIFIER

5.1 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 on

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

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:

```
AmateAudio TPD3K
1 Xo100+SW4Ohms
```

Now the 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. The first user program is number 31 and programs 1-30 are the factory presets.

An admiration mark (!) beside the program name means that the program has been modified but not stored. Read-only presets (1-30) can be only saved as new presets in the free user slots (31-100). See **Table 3**.

```
AmateAudio TPD3K
 ! My_Preset
```

⚠ **WARNING:** when no signal is present at the input, the amplifier will power up in eco mode (Led Eco on). After signal is applied, the normal operation will start. See section 5.4 for more details.

5.2 DSP Preset selection

In order to properly distribute the frequencies to the different channels, the DSP must be configured first. To ease this process the **TPD3K** has built-in presets for the most common applications, using Amate Audio loudspeakers or generic loudspeakers.

Preset 1 to 10: Generic presets (read-only).
- Provide a template for the most common applications using generic loudspeakers (i.e Xo100+SW4Ohms). The subwoofer channel is configured with a Low Pass filter of 80, 90, 100, 110 or 120 Hz, and a clip limiter depending if the load is 4 Ohms or 8 Ohms. The L/R channel is configured with a HPF also in the range of 80, 90, 100, 110 or 120 Hz. The limiters are set to the maximum power that can be delivered by the amplifier.
- The user can modify the inputs and the outputs, but they cannot be overwritten.

Preset 11 to 23: Amate Audio presets (read-only).
- Defined for Amate Audio loudspeakers. Provide extra EQ and limiter settings to improve the performance of the loudspeaker (i.e. JK26A+2JK12W).
- The user can only modify the input parameters. Cannot be overwritten.

Preset 24 to 100: User presets (Empty).
- Free slots to store modifications made on read-only presets.
- Only Admin users can load an empty preset.

No.	Type	Read-Only	Name	Out SW (AUX1)	Out L (AUX2)	Out R (AUX3)
1	Generic	Yes	Xo100+SW4Ohms	LPF 100 Hz 4 ohm Load	HPF 100 Hz	HPF 100 Hz
2	Generic	Yes	Xo100+SW8Ohms	LPF 100 Hz 8 ohm Load	HPF 100 Hz	HPF 100 Hz
3	Generic	Yes	Xo110+SW4Ohms	LPF 110 Hz 4 ohm Load	HPF 110 Hz	HPF 110 Hz
4	Generic	Yes	Xo110+SW8Ohms	LPF 110 Hz 8 ohm Load	HPF 110 Hz	HPF 110 Hz
5	Generic	Yes	Xo120+SW4Ohms	LPF 120 Hz 4 ohm Load	HPF 120 Hz	HPF 120 Hz
6	Generic	Yes	Xo120+SW8Ohms	LPF 120 Hz 8 ohm Load	HPF 120 Hz	HPF 120 Hz
7	Generic	Yes	Xo80+SW4Ohms	LPF 80 Hz 4 ohm Load	HPF 80 Hz	HPF 80 Hz
8	Generic	Yes	Xo80+SW8Ohms	LPF 80 Hz 8 ohm Load	HPF 80 Hz	HPF 80 Hz
9	Generic	Yes	Xo90+SW4Ohms	LPF 90 Hz 4 ohm Load	HPF 90 Hz	HPF 90 Hz
10	Generic	Yes	Xo90+SW8Ohms	LPF 90 Hz 8 ohm Load	HPF 90 Hz	HPF 90 Hz
11-23	Amate	Yes	Specific presets for Amate Audio loudspeakers. The model list depends on the firmware version Please refer to the list enclosed with this manual			
24-100	User	No	Empty			

Table 3. Configuration of the in-built presets

WARNING: Presets marked as Read-Only can be modified, but not overwritten. To save a modified factory preset, a User slot (in the position 31 to 100) must be used.

WARNING: Make sure that you select a preset that matches the load impedance of the subwoofers. If the total load of the channel is 4 Ohm select a "4 Ohm load" preset. If the load is 8Ohm, select "8 Ohm load". Default presets are optimized for a 4 Ohm load.

5.3 System Optimization

The built-in presets of the **TPD3K** have been adjusted to obtain the maximum dynamic range from the amplifier. It is recommended to control the output power by regulating the signal level at the amplifier's input (using the corresponding gain control of your sound source).

When the maximum output power has been reached in any of the 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.

5.4 Standby and Eco mode

The **Eco Mode** is a built-in function intended to save energy costs when the amplifier is idle. When this mode is active, the green led "Eco" will be lit and the power supply enters a low power consumption mode. In EcoMode, the DSP remains on and it can be still operated.

The amplifier will go automatically into Eco Mode under two conditions:

- After 3 minutes without presence of signal at the audio input.
- When the amplifier is powered up (by activating the rear switch, pushing the standby button or applying AC at the input) it will automatically set the EcoMode if at this time no signal is present at the input.

As soon as signal is detected again, the amplifier will switch on again. During the power up process, the led PROTECT (red) will light, and output will be delivered after 8 seconds.

The **Standby** function allows the user to quickly switch off the amplifier from the front panel. When in Standby, the power supply is switched off and the DSP will be set in idle.

When pressing the standby button, it will change its colour to red. To set the amplifier in normal working mode, press again the button (it will be change again to white colour). During the power up process, the led PROTECT (red) will light, and output will be delivered after a few seconds.

5.5 Cooling

The **TPD3K** is equipped with electronically controlled forced ventilation, which is carried out by a turbine situated at the rear panel. 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 favour 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.

5.6 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 over-temperature, in order to keep the amplifier working safely without undesirable stops. In case the temperature keeps rising, the corresponding protection circuit will cause a stop during a certain time according to the seriousness of the anomaly detected. The PROTECT led will light on and the output of the affected channel(s) will be disconnected.

Before the amplifier completely stops because of temperature problems, it will reduce the output level by 6dB approximately. Once the temperature reduces to normal parameters, the normal output level will be re-established.

Short circuit

In case of very low impedance or short circuit in any loudspeaker output, the PROTECTION led is activated and the output will be disconnected.

Direct Current

In the case that due to some malfunction the power module tries to de- liver direct current (DC) at the output, the protection circuit will immediately disconnect the module to avoid damage to the loudspeakers. In that case, the PROTECT led will light on and the output will be disconnected.

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

- Disconnect all the connected peripheral equipment (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 fan is 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*

## 6 OPERATING THE DSP

6.1 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:

6.1.1   Load - Preset Recall

As explained in Section 5.2, the **TPD3K** unit has a built-in memory that stores different program setups (presets). A program can be recalled using this menu. Use the rotary knob to browse the desired program to load and click it to accept:

```
Load:          1
My_Preset
```

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

```
Load Preset ?        Load Preset ?
    NO/yes               no/YES
```
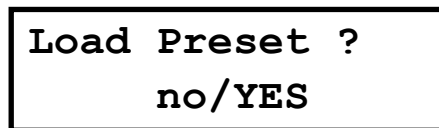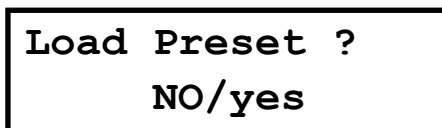
WARNING: It is very important to select a Preset that best fit your loudspeakers. A wrong preset selection may lead to permanent damage to loudspeakers.

6.1.2   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.

NOTE: Read-Only Factory programs cannot be overwritten. Should you modify a Factory program (Preset 1 to 30) and need to save it for later recall, please select a user slot (31 to 100)

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:

```
Save:         31        Set Presetname:
Xo100+SW4Ohms           My_Pre_
```
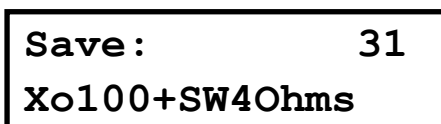
Once you finish typing the name of the preset, press again the *Menu* key to confirm. Press the rotary knob to select "YES". A confirmation message is displayed.

```
Save Preset?
        no/YES
```

```
Preset Saved OK
My_Preset
```

6.1.3   Access Level

Three access right levels are available:

- **Locked**: the front panel controls will be locked. To select which controls can be used with this access level, see section 7.4.6
- **User**: the default access level. The controls than can be accessed are shown in **Table 4**.
- **Admin**: extended access for advanced configurations.

By default, the TPD3K unit is unlocked for User level.

```
Access Level:
        Unlocked
```

To set the system with Locked access rights, turn the rotary knob until the word "Locked" is displayed. The system will prompt for a password.

```
Access Level:
**** Locked ****
```

```
Set Password:
        MyPass
```

```
Confirm Password
        MyPass
```

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 for user level is "Password". If you need the Admin password, see Chapter 8.

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

To UNLOCK the device and gain User access level again, proceed with the following steps:

Press the menu key. The Lock screen will appear. Turn the rotary knob counterclokwise to select "Unlocked"

```
┌─────────────────────────────┐
│                             │
│  Access Level:              │
│                             │
│                             │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│                             │
│  Access Level:              │
│         Unlocked            │
│                             │
└─────────────────────────────┘
```

Then enter the password. Click enter to finish.

```
┌─────────────────────────────┐
│                             │
│  Enter Password             │
│        Pas_                 │
│                             │
└─────────────────────────────┘
```

The following table summarizes all the available controls and with which access level are available:

Menu Function	Channel	Para-meter	Value	Unit	Access level	
					Amate	Generic
Gain	Input	Gain	-48 to +0; Step: 0.25	dB	User	User
	Output	Gain	-48 to +6; Step: 0.25	dB	Admin	User
Mixer	Output	Input L / R	-48 to 0; Step: 0.25	dB	Admin	Admin
Delay	I / O	Delay	0 to 2000; Step depends on range	ms	User	User
LowPass / High Pass	I / O	Freq.	20 to 20000; Step depends on range	Hz	User (I)	User (I)
		Type	BUT 6dB / BES 6dB / BUT12 dB / BES 12 dB / LR 12 dB / BUT 18 dB / BES 18dB / BUT 24dB / BES24 dB / LR 24dB		Admin (O)	Admin (O)
		Enabled	On / Off		User (I)	User (I)
PEQ 1 to PEQ 10	I / O	Freq.	20 to 20000; Step depends on range	Hz	User (I)	User
		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	Input	Thr.	-48 to +24; Step: 0.25	dBu	Admin	Admin
		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	-12 to +12; Step: 0.25	dB		

		Gain				
Limiter	Input	Thr.	-48 to +12; Step: 0.25	dBu	User	User
		Rel.	10 to 100; Step: 1	dB/s	Admin	Admin
Limiter	Output	Thr.	-48 to +10; Step: 0.25	dBu	Admin	User
Phase	Output	Phase	Normal / Inverted		User	User
Link	I / O	Link	Off / On		User	User

Table 4. List of available menus and their access level rights.

6.1.4   Version Info

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

```
Version Info
 SN: 0000010262
```

```
Version Info
 SW:10.0.8.112796
```

```
Version Info
HW: 4.9.3
```

```
IP Address
000.000.000.000
```

```
MAC Address
0000:00:00:00:C0
```

NOTE: In **TPD3K**, where no network card is available, IP Address and MAC Address are shown with default values (all zero).

6.2 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 input channels are linked. The following options are shown for the input group composed of InL and InR (InLR).

6.2.1   Input Gain

Adjust the gain of each input, using the rotary knob. Maximum value is 0dB.

```
In LR   Gain
    -1.25dB
```

6.2.2   Delay

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

```
In LR   Delay
    0.090ms
```

6.2.3   Crossover

• **Low Pass** – First adjust the Low Pass Filter cut-off frequency. To switch it off, turn the rotary knob clockwise until frequency reaches 20 kHz.

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

Finally, select to enable or disable the filter: Enabled On/Off.

```
In LR    LowPass          In LR     LowPass
Freq:    15000Hz          Type: BUT 24dB
```

• **High Pass** – First adjust the High Pass Filter cut-off frequency. To switch it off, turn the rotary knob counter-clockwise until frequency reaches 20 Hz.

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

Finally, select to enable or disable the filter: Enabled On/Off

```
In LR    HighPass         In LR     HighPass
Freq:    40Hz             Type:     BUT 24dB
```

6.2.4   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:

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

```
In LR    PEQ 1
Enabled: On
```

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

```
In LR    PEQ 1            In LR     PEQ 1
Freq:    1000Hz           Gain:     0.00dB
```

• **Q** - EQ Bandwidth. For shelving filters the Q sets the transition in dB/Oct.
• **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
High-Shelf: Modifies the gain of all the range above a selected frequency.
Low-Shelf: Modifies the gain of all the range below 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.

```
In LR    PEQ 1            In LR    PEQ 1
Q:   2.36                 Type:    Bell
```

6.2.5 Dynamics Compressor [only in Admin mode]

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.

```
In LR     Compr.:          In LR     Compr.:
Thr.: 24.00dBu             Att.: 20ms
```

• **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.

```
In LR     Compr.:          In LR     Compr.:
Hold:   10ms               Rel.: 200ms
```

• **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)

```
In LR     Compr.:          In LR     Compr.:
Ratio: 5.00:1             Gain: 1.00dB
```

6.2.6 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 [only in Admin mode]

```
In LR    Limiter           In LR    Limiter
Thr.: 12.00dBu             Rel.: 50
```

6.2.7   Channel Link

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

```
In LR   Link:
On
```
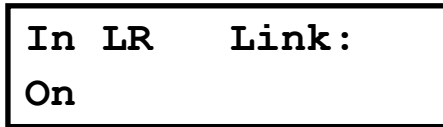
6.3 Output Menus

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.

Please note that by default the outputs channels are linked in groups of two, as shown in the following table:

Internal Channel	Aux Channel	Display Name
Subwoofer (SW)	Aux 1	Out SW1
Left	Aux 2	Out L2
Right	Aux 3	Out R3

Table 5. Links between internal and auxiliary channels

The following menus are available for each output channel. The options are shown for the output link composed of the Left output channel and Aux 2 (Out L2).

⚠ **WARNING:** For the specifics prests for Amate Audio loudspeakers (11 to 30) the output menu parameters are only available with the Admin password.

6.3.1   Gain

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

```
OutL2   Gain
    0.50dB
```
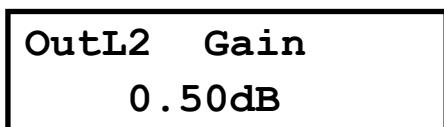
6.3.2   Mixer [only in Admin mode]

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.

```
OutL2    Mixer
Input L   0.00dB
```

```
OutL2    Mixer
Input R    Off
```
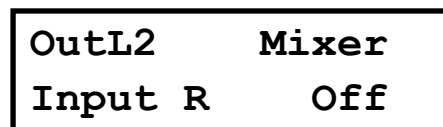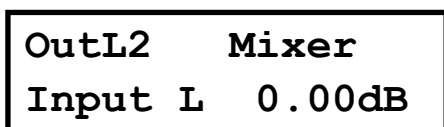
The default setting of the mixer is as following:

Output	Input L	Input R
Subwoofer	**-6.00dB (*)**	**-6.00dB(*)**
Left	**0 dB**	Off
Right	Off	**0 dB**

*NOTE: This value may change depending on the selected preset

Table 6. Default setting for internal channel routing

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

```
OutL2   Delay
      0.000ms
```
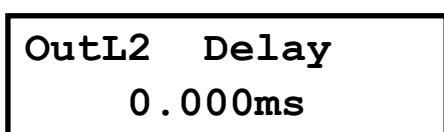
6.3.4 Crossover [see Table 4]
• **Low Pass** – First adjust the Low Pass Filter cut-off frequency. To switch it off, turn the rotary knob clockwise until frequency reaches 20 kHz.
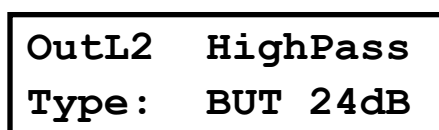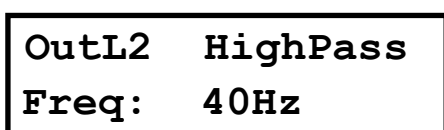
Second, press the rotary knob and select from the available types and slopes:
Type: Butterworth, Slopes: 6dB, 12dB, 18dB or 24dB
Type: Bessel. Slopes: 6dB, 12dB, 18dB or 24dB
Type: Linkwitz-Riley. Slope: 12dB or 24dB

Finally, select to enable or disable the filter: Enabled On/Off.

```
OutL2   LowPass          OutL2   LowPass
Freq:   1500Hz           Type:   BUT 24dB
```

• **High Pass** – First adjust the High Pass Filter cut-off frequency. To switch it off, turn the rotary knob counter-clockwise until frequency reaches 20 Hz.

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

Finally, select to enable or disable the filter: Enabled On/Off.

```
OutL2   HighPass         OutL2   HighPass
Freq:   40Hz             Type:   BUT 24dB
```

6.3.5   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:

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

```
OutL2 PEQ 1
Enabled: On
```

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

```
OutL2   PEQ 1
Freq:   1000Hz
```
```
OutL2   PEQ 1
Gain:   0.00dB
```

• **Q** - EQ Bandwidth. For shelving filters the Q sets the transition in dB/Oct.
• **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
High-Shelf: Modifies the gain of all the range above a selected frequency.
Low-Shelf: Modifies the gain of all the range below 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.

```
OutL2 PEQ 1
Q:      2.36
```
```
OutL2 PEQ 1
Type: Bell
```

6.3.6   Limiter [see Table 4]

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.

```
OutL2   Limiter
Thr:    +7.50dBu
```

6.3.7   Phase – Phase inversion

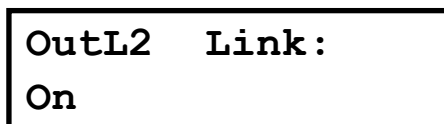Change the polarity of the channel by a 180º phase inversion. Select between Normal or Inverted.

```
OutL2   Phase:
Normal
```

6.3.8   Channel Link

Output channels can be linked in order to set the same parameters on both. Turn the rotary knob set the link off.

For Amate presets, this is only available in Admin mode.

```
OutL2   Link:
On
```

7 OPERATING THE SOFTWARE

7.1 Installing the Control Software

The **TPD3K** units are shipped with a Computer Software which provides a Graphic User Interface (GUI) application - DSPLink. DSPLink allows the user to control the **TPD3K** 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.

DSPLink is available for PC (Windows) and Mac (OSX). 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.

7.2 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.

7.3 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 devices connected to the computer, in order to identify each unit.

STANDBY: When this button is clicked, the unit 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.

7.4 Device Options

7.4.1   Access Level

There are two access levels to the parameters in the **TPD3K**: User and Admin. The Admin level provides access to extended features. To access the Admin Level enter the valid password as shown in Section 7.4.6.
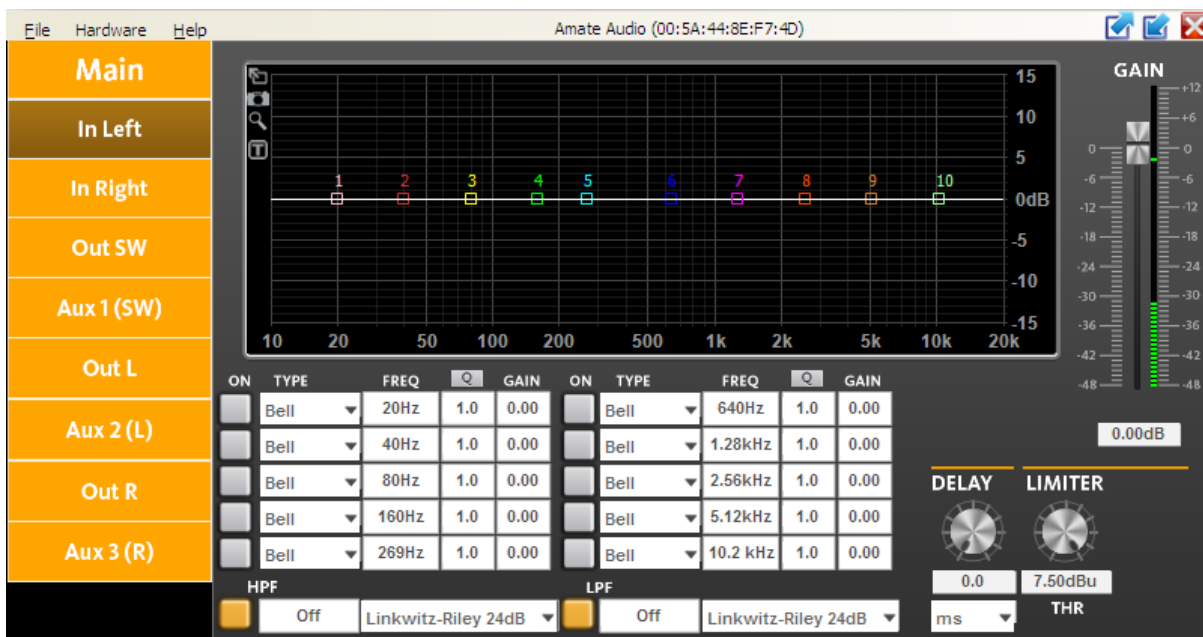
7.4.2   Main window

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.
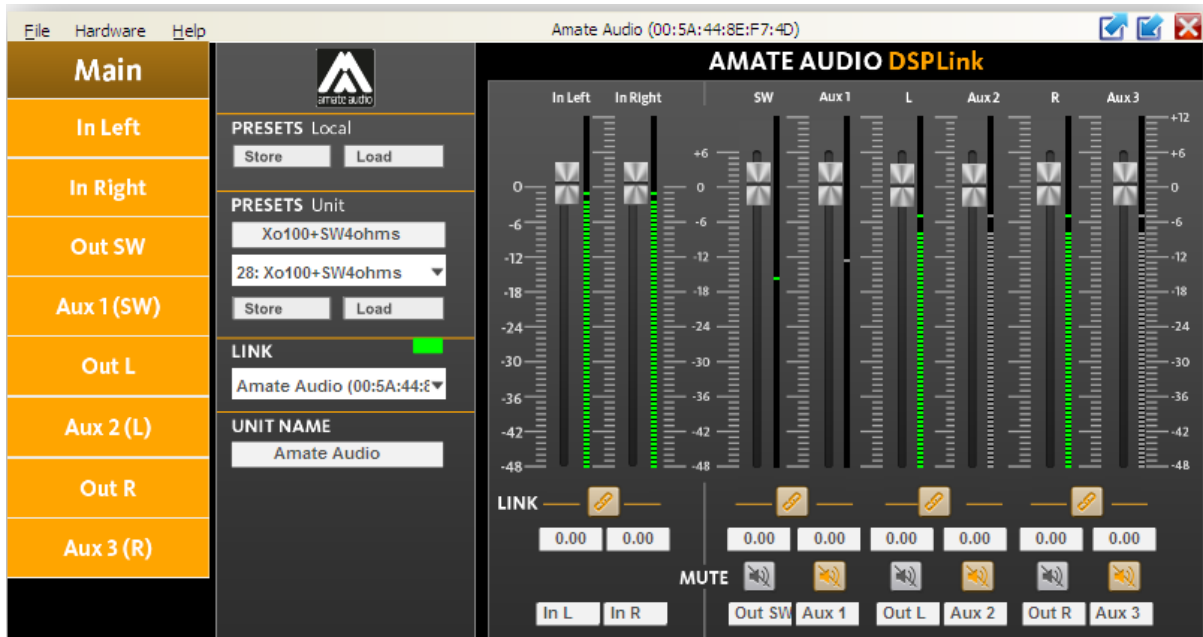
7.4.3 Input Window

When selecting one of the inputs on the left side, a window with all available controls will be displayed: PEQ, Xover, Gain, Mute, Polarity, Limiter and Compressor (only in Admin Mode)


To access all available parameters of the Compressor, click on the word "COMPRESSOR" besides the Limiter control. This will be only available when the Admin password has been introduced. A new window will display showing the controls for Threshold, Attack, Hold, Release, Ratio and Makeup Gain.

7.4.4 Output Window

When selecting one of the outputs on the left side, a window with all available controls will be displayed: PEQ, Gain, Mute, Polarity and Limiter (for User mode) and Mixer and Xover (for Admin mode)
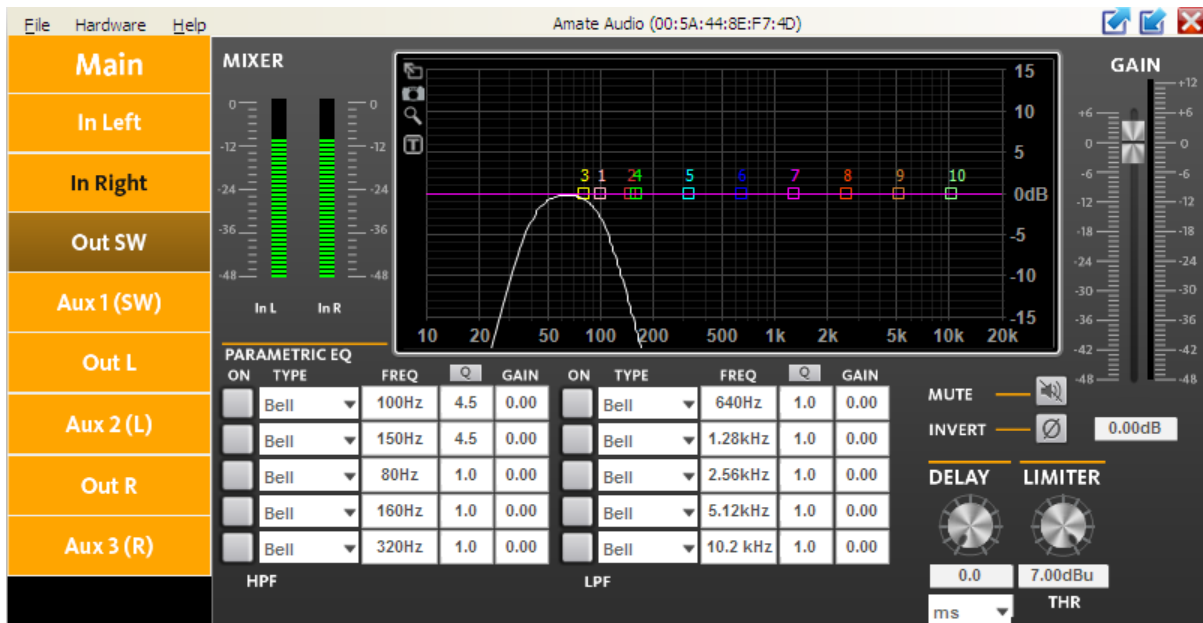
7.4.5 File Menu

- **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.

7.4.6 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"). Enter here the password to gain access to the Admin features.

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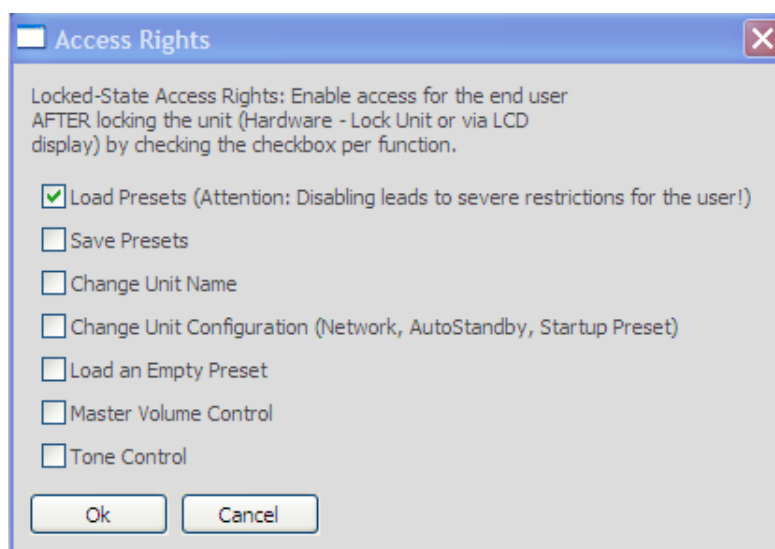
- **Lock unit**: In order to lock the unit by password, select "Hardware > Lock Unit". To unlock the unit again, select "Hardware > Enter Password".

- **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 8).

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

8 TROUBLESHOOTING

8.1 How to perform a firmware upgrade

To perform a firmware upgrade, proceed as following:

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 (see next chapter)
5. Go to "Hardware > Firmware Upgrade"
6. Follow the on-screen instructions
7. Select whether you want to perform a backup of the user presets to recover them after the upgrade
8. The unit will restart and will ask to load a Factory File. Select "yes" and load the file in the selected folder. The file must contain the name TPD3K in it. For example: "20210726_TPD3K.factory"
   IMPORTANT: The unit will not operate properly if the correct factory file is not loaded
9. Finally, the unit will restore the user presets.
10. Restart the unit.

8.2 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).

The Admin password is "AMT_adm".

WARNING: The admin password gives you privileges to change vital information of the processing. A wrong setting may damage the amplifier and /or the loudspeakers, excluding any warranty on the equipment.

9 TECHNICAL SPECIFICATIONS

Audio Input (IN L, R)	
Voltage Gain @ 0 dBFS	30dB (Amplifier only)
Input Impedance	>10 kΩ
Maximum Level	+23 dBu
Type	Electronically balanced
Analog Outputs (AUX 1, 2, 3)	
Number	3
Maximum Level	+12 dBu
Type	Impedance Matched

Audio Performance		

Output Power (1 kHz - 0,1% THD) [1]
    L&R Channels
    SW Channel
	4 Ω Load
	
	750 + 750 W
	2000 W
		8 Ω Load
		
		375 + 375 W
		1500 W

Frequency Response
    L&R Channels
    SW Channel
	With flat DSP Setting
	70Hz to 20kHz (+/- 0.5dB)
	20Hz to 200Hz (+/- 0.5dB)	

Input Dynamic Range	110 dB (unweighted)	
Crosstalk	< -65 dB	
Damping Factor (1kHz @ 8 Ω)	L & R > 1200 Subwoofer > 600	
Distortion	0.005% (A-weighted)	

Digital Audio Performance	
Processing	64-bit
Analog Converters	48 kHz Sampling, High Performance 24-bit
Propagation Delay	1.32 ms
Front Panel Controls	
Display	2 x 16 Character High contrast black 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)
Speaker Output	Speakon (1+, 1-)
Power	Standard IEC Socket
Mains Supply	
Power	85 to 240 VAC (50 / 60 Hz)
Average Current Draw[2]	5 A @ 230VAC
Enclosure	
Dimensions (H x W x D)	2U 19" Rack 88 x 482 x 370 mm
Weight	8.5 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): Heavy duty musical program.
Specifications subject to change without prior notice (September 2021)

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 with signal processor. Audio apparatus for professional use
Name: **TPD3K**

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: July 28, 2021

Signature:

AMATE AUDIO S.L.
N.I.F: B59103481
Violinista Vellsolà, 1
Tel: +34 9
08222 – Terrassa
Barcelona – SPAIN

Joan A. Amate Martinez
General Manager

CE

Conformity Marking

TPD3K amplifiers have been designed, engineered and manufactured in Barcelona – SPAIN by

Los **amplificadores TPD3K** han sido diseñados y fabricados en Barcelona – ESPAÑA por

Amate Audio S.L.

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