



IPR2™ 2000/3000 IPR2™ 2000/3000 DSP Power Amplifiers

Operating Manual



IPR2™ 2000/3000 DSP

Power Amplifier

As the name implies, the IPR2™ 2000 and 3000 DSP all include advanced digital signal processing. The DSP was designed to be incredibly effective, yet extremely easy to use. Using unique and revolutionary advanced bass enhancement processes, the IPR2 DSP amplifiers dramatically improve the perceived level of bass in any system, using a fraction of the power that would be required with any other power amplifier.

Before you send signal through your amplifier, it is very important to ensure that the product has the proper AC line voltage supplied. You can find the proper voltage for your amp printed next to the IEC line (power) cord on the rear panel of the unit. Each product feature is numbered. Refer to the front panel diagram in this manual to locate the particular features next to its number.



Please read this guide carefully to ensure your personal safety as well as the safety of your amplifier.

IPR2™ 2000 / 3000 DSP FEATURES:

- DDT™ protection
- Revolutionary IPR2 class D topology
- Combination XLR and 1/4" inputs
- 2-pole twist lock output connector
- Light weight
- Individual signal patch-thru 1/4" jacks on each channel
- LED illuminated
- DSP-based Loudspeaker Management System
- Up to 120 ms of delay per channel
- 4 bands of parametric equalization per channel
- Security lock
- Adjustable Crossover
- Adjustable second through fourth-order high-pass filter each channel
- MAXX Bass® bass enhancement circuitry
- Horn EQ each channel
- Blue, backlit LCD screen indicates DSP setting



WARNING: PLEASE REVIEW YOUR DSP SETTINGS BEFORE SENDING SIGNAL TO THE AMPLIFIER. INCORRECT SETTINGS CAN POTENTIALLY DAMAGE SPEAKER ENCLOSURES.



VENTILATION: For proper ventilation, allow 12" clearance from nearest combustible surface. Make sure that vents are not blocked and air can flow freely through the unit.



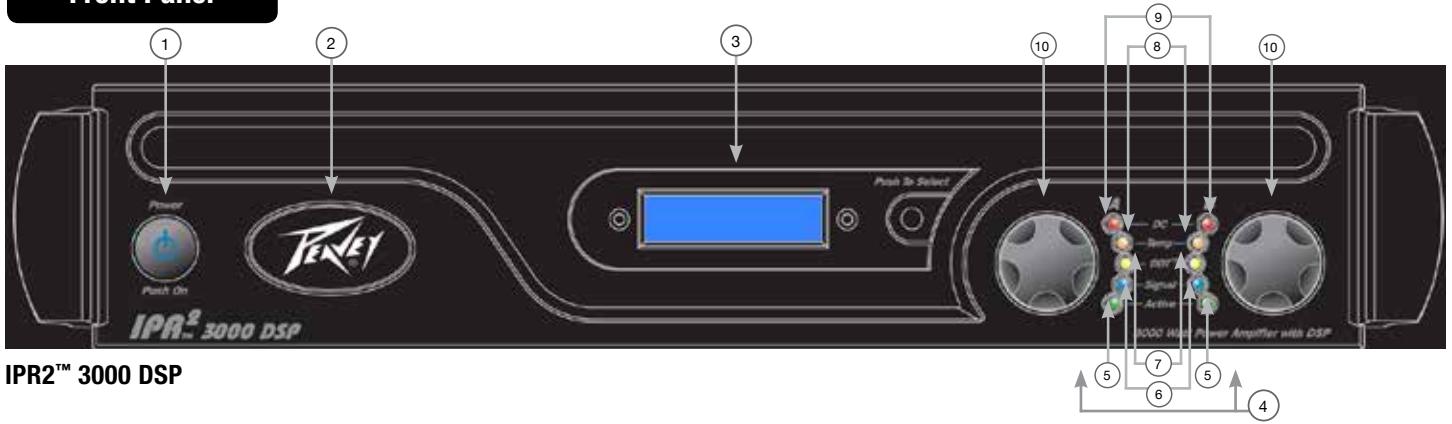
WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

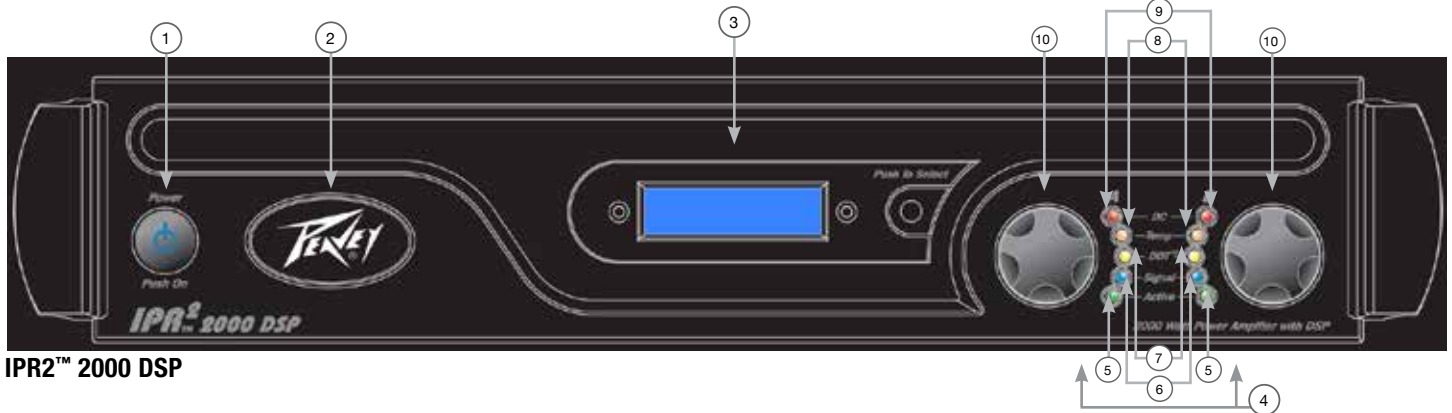
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Front Panel



IPR2™ 3000 DSP



IPR2™ 2000 DSP

1 AC POWER SWITCH

This button indicates power is connected to the amplifier by glowing dimly while the amplifier is off. When the switch is depressed, the amplifier will turn on and the switch will illuminate brightly.

2 PEAVEY LOGO

While the amplifier is off, the logo is illuminated dimly to indicate power is connected. When the amplifier is on, the logo will illuminate brightly.

3 LCD SCREEN

Blue, backlit LCD screen indicates DSP setting.

4 INDICATORS

The IPR2™ amplifiers feature five front-panel LED indicators per channel: ACTIVE, SIGNAL, DDT™, TEMP and DC. These LED indicators inform the user of each channel's operating status and warn of possible abnormal conditions.

5 ACTIVE LED

The Active LED indicates that the channel is operational. It illuminates when the amplifier is in normal operation. If the Active LED goes off, the channel is not operational.

6 SIGNAL LED

This LED lights when its channel produces an output signal of about 4 volts RMS or more. The Signal LED indicates whether a signal is reaching and being amplified by the amplifier.

7 DDT™ (DISTORTION DETECTION TECHNIQUE) LED

A channel's DDT LED will light at the onset of clipping. If the LEDs are flashing quickly and intermittently, the channel is just at the clip threshold. A steady, bright glow means the amp is clip limiting, or reducing gain to prevent severely clipped waveforms from reaching the loudspeakers.

8 TEMP LED

In the unlikely event of an unstable thermal condition, amplifier protection will be activated and will shut down the offending channel. The Temp LED will remain illuminated until safe operating temperatures have returned.

9 DC LED

In the event of abnormal operating conditions, the IPR2 has built-in amplifier protection. Under conditions that would normally damage the loudspeaker, the DC LED will illuminate and the amplifier will automatically attempt to restart to correct the condition. If the amplifier does not return to normal operating status, contact your local authorized service center.

10 INPUT ATTENUATORS

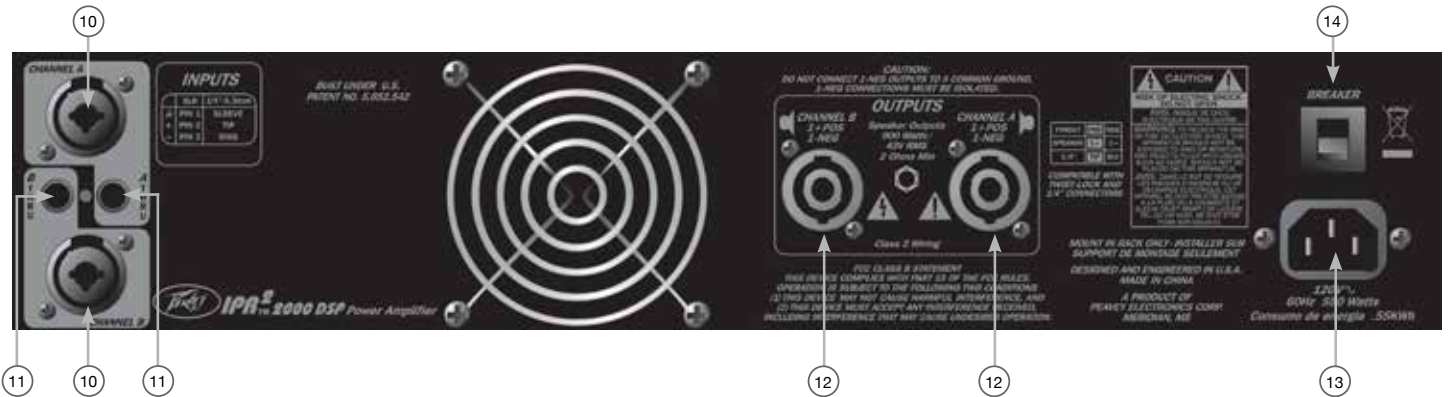
Whenever possible, set the attenuators fully clockwise to maintain optimum system headroom. The input attenuator controls, located at the front panel (one for channel A, one for channel B), adjust signal attenuation for their respective amplifier channels in all modes. See the specifications at the end of this manual for standard voltage gain and input sensitivity information.

Rear Panel

IPR2™ 3000 DSP



IPR2™ 2000 DSP



11 CONNECTING INPUTS

Input connections are made via the 3-pin XLR (pin 2+) or 6.3mm plug combination connectors on the rear panel of the amplifier. The inputs are actively balanced. The input overload point is high enough to accept the maximum output level of virtually any signal source.

12 THRU/OUT JACKS

This 1/4" (6.3mm) jack is a parallel connection to the input connector for patching to this amplifier and/or additional power amplifier inputs. A TRS plug must be used to maintain a balanced connection.

13 CONNECTING OUTPUTS

All models have one two-pole twist lock and 1/4" (6.3mm) phone plug combination connector per channel. All four speaker connection wires must be isolated from each other.

14 CIRCUIT BREAKER

In the unlikely event of operating conditions that may potentially damage the amplifier, the circuit breaker may trip. After inspecting the cables and connections, the amplifier can be reset. If the circuit breaker trips a second time, contact the local Peavey authorized service center.

15 AC POWER INLET:

This is the receptacle for an IEC line cord, which provides AC power to the unit. Connect the line cord to this connector to provide power to the unit. Damage to the equipment may result if improper line voltage is used. (See line voltage marking on unit).

Never break off the ground pin on any equipment. It is provided for your safety. If the outlet used does not have a ground pin, a suitable grounding adapter should be used and the third wire should be grounded properly. To prevent the risk of shock or fire hazard, always make sure that the amplifier and all associated equipment is properly grounded.

NOTE: FOR U.K. ONLY

As the colors of the wires in the mains lead of this apparatus may not correspond with the colored markings identifying the terminals in your plug, proceed as follows: (1) The wire which is colored green and yellow must be connected to the terminal which is marked with the letter E, or by the Earth symbol, or colored green or green and yellow. (2) The wire which is colored blue must be connected to the terminal which is marked with the letter N, or the color black. (3) The wire which is colored brown must be connected to the terminal which is marked with the letter L, or the color red.



Navigation Overview

Once the IPR2™ screen appears, you can start adjusting the DSP processor. Pressing the encoder will bring you to the main menu.

The encoder knob to the right of the display is used to navigate and control the DSP functions. The Channel A and B controls to the left of the display are also encoders but are dedicated to adjusting input gain for each channel. Turning the encoder knob to the right of the display will allow you to scroll through the Main Menu selections. The Main Menu not only allows you to select a process for editing, but also provides a quick view of which processes are activated.

From left to right the menu selections are: Input Mode, Volume, Crossover/Band-Pass Filters, Equalization, Delay, Limiting, Memory and Lock.



Input Mode



Volume



Crossover / Band-Pass Filters



Equalization



Delay



Limiting



Memory Lock

To select an item from the Main Menu, rotate the encoder until the cursor marks the selection you want. Press the encoder to navigate to the Sub Menu adjustment screens for that processing function. When you enter a processing function Sub Menu, the cursor will appear in the upper left corner of the screen allowing you to scroll through Sub Menu screens. To edit a parameter, press the encoder to move the cursor to the desired parameter on the screen. Turning the encoder then adjusts that parameter. To scroll to another screen, press the encoder to return the cursor to the upper left corner of the screen. You can now scroll through Sub Menu screens.



Discard and Exit

To reset the DSP and discard edits, select “Discard and Exit” from the Sub Menu to delete the edits made since entering the Sub Menu.



Save and Exit

The final screen in most process Sub Menus is “Save and Exit.” Press the encoder in this screen to save the edits and return to the main menu.

Note: Adjustments made are not stored until Save and Exit is selected and you return to the main menu. Turning off the amplifier while editing in a Sub Menu gives the same result as “Discard and Exit.”

Volume

Volume

The current gain settings are always available in the main menu screen. The dedicated encoders on the front panel are used for adjustment of the A and B channels in stereo and mono modes. If the input mode is set to Bridge, the Channel B control is not active and the volume display shows “na.”



Mode



Stereo Input Mode

Stereo: Inputs A and B go to outputs A and B.



Mono Input Mode

Mono: Input A drives both outputs A and B.



Unlike the other function Sub Menus, the input mode does not change until you select “Save and Apply” and return to the Main Menu.

Crossover Filters, Band-Pass Filters and Polarity

Set: BP Filters Independently

When you enter the “XOVER” Sub Menu, you are given three options for how the band-pass filters can be set. When Set “BP Filters Independently” is selected, the Channel A and B high-pass and low-pass filters are individually set.



Set: BP Filters Channel B=A

If you are using the amplifier in a stereo system where both channels will be set the same, select “Channel B=A” and both channels will be set at once. Setting the filters for Channel A also sets Channel B.



Set: X-Over Freq A Lows B Highs

If you create a crossover between channels of the amplifier, select “X-over Freq A Lows B Highs” and crossover frequency and filter type can be set with one set of controls. Set by crossover screen, High-pass and Low-pass screens.



The filter types available for the high-pass and low-pass filters are:

- Off** No filter
- BW-12 dB** Butterworth filter with 12 dB per octave slope. -3dB at corner frequency. Butterworth filters have a flat frequency response in the pass-band.
- BW-18 dB** Butterworth filter with 18 dB per octave slope. -3dB at corner frequency. Butterworth filters have a flat frequency response in the pass-band.
- BW-24 dB** Butterworth filter with 24 dB per octave slope. -3dB at corner frequency. Butterworth filters have a flat frequency response in the pass-band.
- LR-24 dB** Linkwitz-Riley Filter with 24 dB per octave slope. -6dB at corner frequency. LR filters combine for a flat response at the corner frequency.

It is generally a good idea to use a high-pass filter for all loudspeakers.

Output Polarity



Output Polarity

The output polarity can be inverted on either channel. Select Normal or Invert in the polarity screen. If you create a crossover with 12dB per octave filters, the high frequency output would likely need to be inverted to maintain the proper phase relationship at the crossover frequency. Temporarily inverting the polarity of one channel of a multi-way system can also aid in the setting of the delay for driver alignment. You can adjust the delay for cancellation at the crossover frequency. Remember to switch the polarity back to Normal when complete.

To return to the Main Menu, select Discard and Exit or Save and Exit.

Equalization

The IPR2™ DSP provides five bands of parametric EQ, Waves® Maxx Bass® enhancement and horn EQ on each channel.

Bypass



EQ Bypass

The first screen in the EQ Sub Menu is the bypass screen. The channels can be bypassed independently or both A&B can be bypassed together. Press the encoder until the cursor is under the desired parameter to change and rotate the encoder to change the bypass mode. Press the cursor to return it to the upper left corner when done so you can scroll to other screens.

Set Channel EQ

The first screen in the EQ Sub Menu is the bypass screen. The channels can be bypassed independently or both A&B can be bypassed together. Press the encoder until the cursor is under the desired parameter to change and rotate the encoder to change the bypass mode. Press the cursor to return it to the upper left corner when done so you can scroll to other screens.

MaxxBass®



The MaxxBass® enhancement system interacts with the high-pass filter for each channel to produce bass energy in a frequency range the loudspeaker can handle. The higher the MaxxBass® number, the more the bass is enhanced.

Parametric EQ



There are five bands of parametric EQ for each channel. The frequency can be set in 1/12 octave frequency steps. The filter bandwidth is set and displayed in octaves. The level can be adjusted over a +/- 15 dB range. Press the encoder to select the desired parameter to adjust. Return the cursor to the upper left corner when done to scroll to other screens.

Horn EQ

The Horn EQ provides a 6dB per octave high frequency boost that is sometimes required for high frequency horns. The frequency control sets the low frequency corner of the filter.

To return to the Main Menu, select Discard and Exit or Save and Exit.



Delay

Delay can be used to align drivers within a loudspeaker or to delay auxiliary speakers like those installed under a balcony. A short delay can also be used to delay the main speakers to align them with the drums or bass guitar. A total of 125 mS of delay is available on each channel. 5 mS of delay is available in 41.67 uS steps for driver alignment. 120 mS is available in 1 mS steps for system alignment. These delays can be set independently so that the driver alignment offset can be maintained when the system alignment delay is adjusted.

The first screen in the delay Sub Menu allows the user to decide whether the delays will be set independently or B=A. This selection only applies to the 1 mS step system delay, leaving the driver alignment delays to be set independently. The IPR2™ amplifiers display the equivalent delay distance in meters and feet in the system delay and centimeters or inches in the driver delay.



System (mS) Delay screen



Driver alignment (uS) screen

Limiter

The IPR2 DSP has limiters available on each channel. These limit the signal level to the input of the power amplifier stage. The limit threshold starts at zero and is adjusted in -1 dB steps, reducing the maximum output. You must be aware the IPR2 DSP works the same as most other amplifiers, as their maximum output depends on the line voltage and load impedance. Depending on load, you may need to reduce the limiter up to 3 dB before the output is reduced.



Memory

The IPR2 has four memory locations where its settings can be stored and then recalled. Each location has a six-character name to identify the file. The name of the active preset is also displayed in the Main Menu "Memory" screen.

Saving Settings

In the Memory Operation Sub Menu, select “Save Settings.”

Select one of the four preset locations.

Edit the name by rotating the cursor to select the character and pressing the encoder to step to the next position. Continue until complete. To keep the same name, press the encoder six times to step through the name edit screen.

Once the save location has been selected and you have named the preset, you will be given a yes/no option to complete the save.



Recalling a Preset

In the Memory Operation Sub Menu, select “Recall Settings.”

Select the Preset number to recall or select “Recall Factory Settings” to recall a neutral state. Just like the save function, the option is given to exit without completing the recall option.



Lock

The security lock feature of the IPR2™ DSP allows selected controls to be locked to prevent unauthorized adjustment. A four-digit password must be set when the lock is engaged. This password must be entered whenever a Sub Menu is entered to allow temporary access to the edit functions. The lock is re-engaged whenever you return the Main Menu or turn the unit off. All editing is locked when the power is off.

Note: Be sure to make note of the password. Contact customer service if the password is lost or misplaced.

The IPR2 amplifiers have three different lock modes:

- | | |
|--------------------------|---|
| Off | All settings can be adjusted without entering a password. |
| All Except Volume | A password must be entered for all edit Sub Menus except volume. |
| All with Volume | A password must be entered for all edit Sub Menus including volume. |

IPR2™ 2000 DSP Specification Sheet

Rated Watts 2ch x 2 ohms	1100 watts 20ms repetitive burst / 900 watts 1% THD both channels driven @ 1kHz.
Rated Watts 2ch x 4 ohms	600 watts 20ms repetitive burst / 570 watts 1% THD / 500 watts 0.15% THD, both channels driven @ 1kHz.
Rated Watts 2ch x 8 ohms	370 watts 20ms repetitive burst / 325 watts 1% THD / 270 watts 0.15% THD, both channels driven @ 1kHz.
Minimum Load Impedance	2 ohms
Maximum RMS Voltage Swing	56 volts
Frequency Response	10Hz - 22kHz; +/- 0.5dB at 1 watt.
20Hz - 20kHz 2ch x 2 ohms	<0.25% @ 650 watts 20Hz to 4kHz, decreasing to 530 watts @ 20kHz, both channels driven.
20Hz - 20kHz 2ch x 4 ohms	<0.15% @ 470 watts 20Hz to 10kHz, both channels driven.
20Hz - 20kHz 2ch x 8 ohms	<0.15% @ 260 watts 20Hz to 10kHz, both channels driven.
Input CMRR	> - 69 dB @ 1 kHz.
Voltage Gain	x 37.5 (+31.5 dB)
Crossover	Adjustable frequencies with 24dB/oct, 4th order Linkwitz –Riley High Pass and Low Pass filter per channel.
Crosstalk	> -70dB @ 1kHz @ 250 watts power @ 8 ohms.
Hum and Noise	> -92 dB, "A" weighted referenced to rated power @ 4 ohms.
Slew Rate	> 12V/ μ s
Damping Factor (8 ohms)	> 150:1 @ 20Hz - 1kHz @ 8 ohms.
Input Sensitivity	1.185 volts +/- 3% for 1kHz 4 ohm rated power, 1.165 volts +/- 3% for 1kHz 2 ohm rated power.
Input Impedance	15k ohms, balanced and 7.5k ohms unbalanced.
Current Draw @ 1/8 power in VA (watts)	540 (315) @ 2 ohms, 370 (185) @ 4 ohms, 240 (115) @ 8 ohms.
Current Draw @ 1/3 power in VA (watts)	1250 (760) @ 2 ohms, 750 (425) @ 4 ohms, 460 (240) @ 8 ohms.
Idle Consumption	90VA, 40watts.
Cooling	Temperature dependent variable speed 80 mm DC fan.
Controls	2 front panel detented attenuators, push-button navigation encoder to navigate through the menus on the LCD screen for input mode, parametric EQ, crossover H.P.F, Normal, L.P.F. and more.
Indicator LEDs	2 DDT™ (clip limiting), 2 Signal presence, 2 Active status, 2 Temp and 2 DC protect.
Protection	Thermal, DC, subsonic, incorrect loads, under and over voltage.
Connectors	Inputs: Dual Combination 1/4" & XLR, Outputs: Dual 1/4" signal patch, dual twist lock connectors.
Construction	0.062" thick aluminum
Dimensions	3.5"x19"x 10.5" behind front panel + 0.6" for handle
Net Weight	3.23 kg (7.12 lbs.*)
Gross Weight	4.31 kg (9.5 lbs.)
Warranty	5 years

Rated power readings made with BW: 20 Hz to 22 kHz. All power measurements made @ 120 VAC or 240VAC.

2 ohm steady state sine wave power is time limited by circuit breaker and AC limitations.

*Net Weight does not include power cord.

IPR2™ 3000 DSP Specification Sheet

Rated Power 2ch x 2 ohms	1750 watts 20ms repetitive burst / 1450 watts 1% THD both ch. driven @ 1kHz.
Rated Power 2ch x 4 ohms	950 watts 20ms repetitive burst / 900 watts 1% THD / 815 watts 0.2% THD, both ch. driven @ 1kHz.
Rated Power 2ch x 8 ohms	525 watts 20ms repetitive burst / 500 watts 1% THD / 430 watts 0.15% THD, both ch. driven @ 1kHz.
Minimum Load Impedance	2 ohms
Maximum RMS Voltage Swing	70 volts
Frequency Response	20 Hz - 22 kHz; +/- .05dB @ 4 ohms
20Hz - 20kHz 2ch x 2 ohms	<0.15% @ 1,200 watts 20 Hz to 3 kHz, decreasing to 1,100 watts @ 20 kHz, both ch. driven.
20Hz - 20kHz 2ch x 4 ohms	<0.15% @ 650 watts 20 Hz to 20 kHz, both ch. driven.
20Hz - 20kHz 2ch x 8 ohms	<0.15% @ 375 watts 20 Hz to 20 kHz, both ch. driven.
Input CMRR	> - 76 dB @ 1 kHz.
Voltage Gain	x 37.75 (+31.5 dB)
Crossover	Adjustable High Pass and Low Pass filter per channel. Filter Types: 12dB/oct 2nd order, 18dB/oct 3rd order, 24dB/oct 4th order Butterworth and 24dB/oct 4th order Linkwitz –Riley.
Crosstalk	> -68 dB @ 1 kHz @ 400 watts power @ 8 ohms.
Hum and Noise	> -92 dB, "A" weighted referenced to rated power @ 4 ohms.
Slew Rate	> 12V/μs
Damping Factor (8 ohms)	> 255:1 @ 20 Hz - 1 kHz @ 8 ohms
Input Sensitivity	1.54 volts +/- 3% for 1 kHz 4 ohm rated power, 1.47 volts +/- 3% for 1 kHz. 2 ohm rated power
Input Impedance	12 kilohms, balanced and 6 kilohms unbalanced.
Current Draw @ 1/8 in VA (watts)	960 (535) @ 2 ohms, 615 (315) @ 4 ohms, 400 (200) @ 8 ohms
Current Draw @ 1/3 in VA (watts)	2065 (1360) @ 2 ohms, 1215 (735) @ 4 ohms, 740 (420) @ 8 ohms
Idle Consumption	160VA, 75 watts
Cooling	Temperature dependent variable speed 80 mm DC fan.
Controls	2 front panel detented attenuators, push-button navigation encoder to navigate through the menus on the LCD screen for input mode, parametric EQ, crossover HPF, LPF. and more.
Indicator LEDs	Five LED indicators per channel: Active, Signal, DDT™, Temperature and DC
Protection	Thermal, DC, subsonic, incorrect loads, under and over voltage
Connectors	Dual combination 1/4" XLR, dual male XLR input thru, two twist lock connectors
Construction	0.062" aluminum
Dimensions	3.5"x19"x 10.5" behind front panel + 0.6" for handle
Net Weight	5.62 kg (12.4 lbs. *)
Gross Weight	6.80 kg (15.0 lbs.)

Rated power readings made with BW: <10 Hz to 22 kHz. All power measurements made @ 120 VAC or 240VAC.

2 ohm steady state sine wave power is time limited by circuit breaker and AC limitations.

*Net Weight does not include power cord.



Features and specifications subject to change without notice.

Peavey Electronics Corporation • 5022 Hartley Peavey Drive • Meridian • MS • 39305
(601) 483-5365 • FAX (601) 486-1278 • www.peavey.com