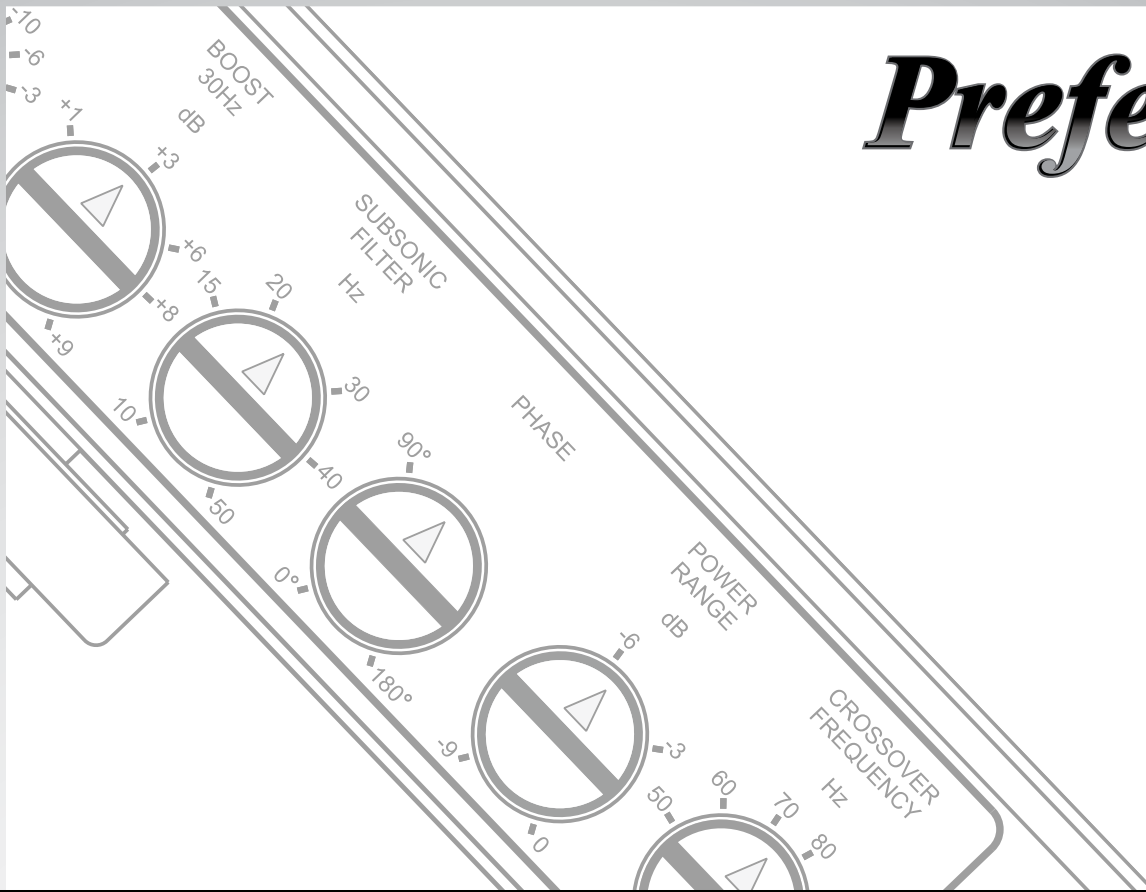
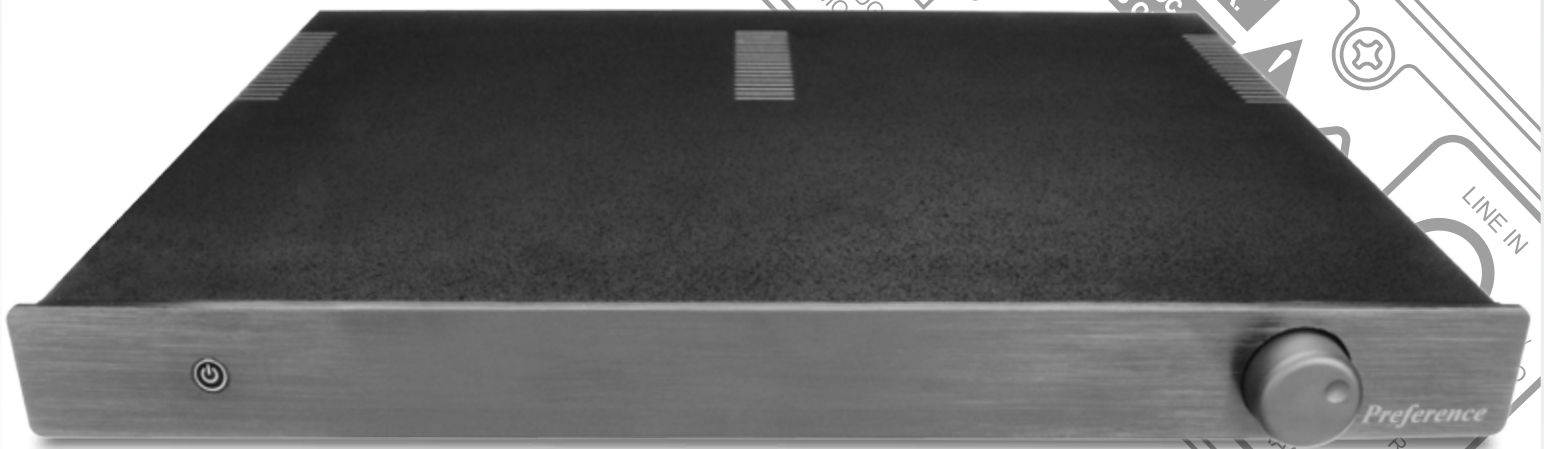


Preference[®]



P-500Xb

**500W (Bridged) High-Current
Class-D Stereo Amplifier**



OWNER'S MANUAL

AMPLIFIER

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YOUR P-500Xb AMPLIFIER

The P-500Xb is a 2-channel High Current Class-D Stereo Power Amplifier that has been developed to provide exceptional power and clarity in an efficient low-profile package while also providing extraordinary flexibility. Part of this flexibility comes from the ability to bridge the two channels together to form a much higher power single-channel amplifier.

In addition to the bridging capabilities, the amplifier has a Precision-Calibrated Control Panel with 6 precision controls for optimizing the drive of virtually any subwoofer and application.

Finally, the amplifier has 3 selectable power modes that allows the amplifier to be turned on and off manually, with a trigger voltage, or with an audio signal.

All these features are covered in further detail within this manual. Additionally, this manual covers general setup, operating procedures, and technical specifications for your P-500Xb.

While a thorough review of this manual may not be necessary if you are using it in a full-range stereo application, to take full advantage of the bridging or subwoofer capabilities, it is recommended that you read through the related sections. This will help ensure that you have sufficient understanding to setup your amplifier for optimum performance and safety. We are confident that P-500Xb will provide you with the extraordinary power and performance necessary to bring your speakers to life.

A word about the Precision-Calibrated Control Panel:

The Precision-Calibrated Control Panel is unique to the P-500Xb. Nearly all "free standing" powered subwoofers include these same functions but only half of the functions are ever available for user customization. The other half are internal to the powered subwoofer and are preset by the manufacturer. With the incorporation of these controls in the P-500Xb, the amplifier can be optimized for driving the widest possible variety of subwoofers.

BOX CONTENTS



Amplifier



Rack Ears with Screws



Power Cord



Owner's Manual

PRECAUTIONS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Do not use this apparatus near water.
- Clean only with a dry cloth.
- This product is for indoor use only.
- Do not block any ventilation openings.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as fireplaces, stoves, heat registers, radiant heaters, or other apparatus that produce heat.
- Do not expose this apparatus to rain or moisture. Objects filled with liquids, such as vases, should not be placed on the apparatus.
- Do not defeat the safety purpose of the polarized or grounding - type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Do not open the enclosure or tamper with the electrical chassis.
- Only use attachments or accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as Power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- To completely disconnect this equipment from the mains, disconnect the power supply cord from the receptacle.
- The mains plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.
- This apparatus has been designed with Class-1 construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).

WARNING



The lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

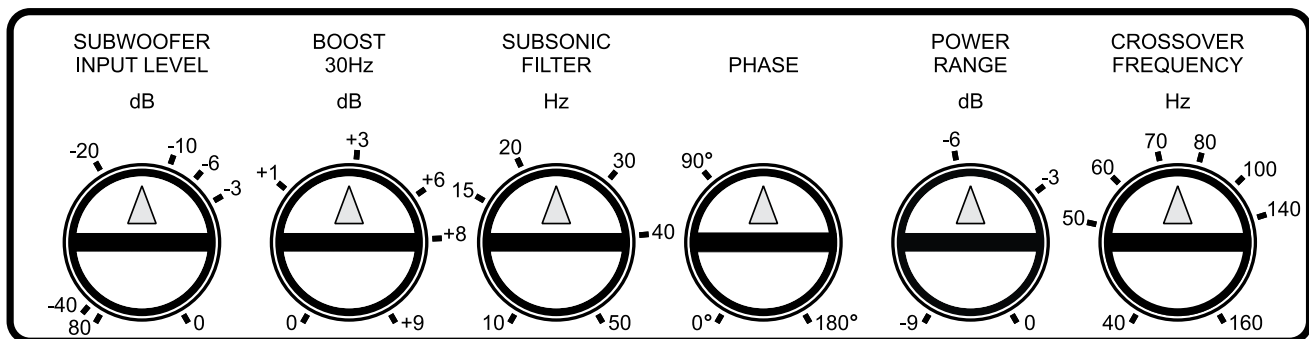
CAUTION



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

FEATURES

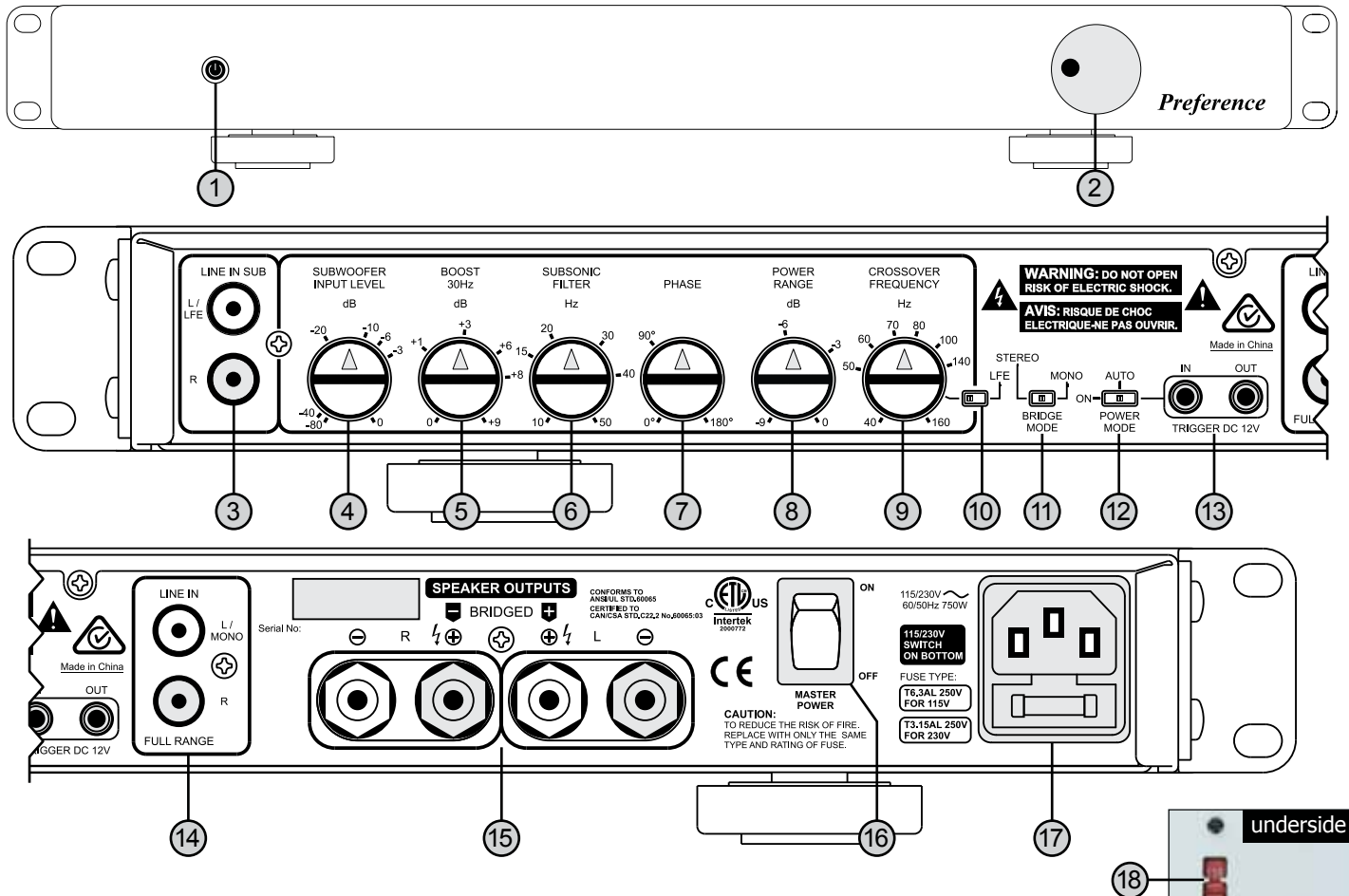
- **500W Stereo Class-D Amplifier:** Providing performance, value, efficiency, and versatility in a low profile 1U high chassis.
- **Front Panel Master Volume Control:** Quick convenient access to output level with elegant and easy to read indicator.
- **6 Precision Variable Controls:** To integrate nearly all subwoofers with the main speakers and the listening environment.
 1. **SUBWOOFER INPUT LEVEL** for blending high and low frequency signal levels
 2. **30Hz BOOST** for maximizing low frequency output
 3. **10Hz-50Hz SUBSONIC FILTER** to protect woofers from damage from bass content outside of the woofer's capabilities
 4. **0-180 Degree PHASE Adjustment** for precise blending of the subwoofer(s) with main speakers
 5. **0dB to -9dB POWER RANGE Limiter** to protect woofers from damage due to excess volume
 6. **40Hz-160Hz Low-Pass CROSSOVER FREQUENCY** to blend the subwoofer(s) with the main speakers



- **3 Power Mode Options:** Allows the amplifier to be turned on and off either manually, with a trigger voltage, or with an audio signal.
- **Separate Full-Range and Subwoofer Inputs:** Provides independent connections for the purest possible signal paths.
- **Low standby current:** Draws less than 0.5W of power when unit is in standby mode.
- **Summed Buffered Subwoofer Inputs:** Combines the left and right incoming signals so that a mono signal is delivered to the subwoofer(s).



P-500Xb shown with included rack ears attached



- ① **Power and Standby Mode Indicator** – Off=No Power, Blue=On, Red=Standby
- ② **Master Volume Control** – Adjusts final output level on both Sub and Full Range Inputs
- ③ **Line In Sub** – Input for the Precision-Calibrated Control Panel. 10-300Hz subwoofer frequency range
- ④ **Subwoofer Input Level** – Adjusts the input signal level. Affects engagement point of Power Range limiter.
- ⑤ **30Hz Boost** – Allows fine tuning of subwoofer(s) and adds output at the low end of the audio spectrum
- ⑥ **Subsonic Filter** – Used to reduce the output at very low frequencies; adjustable from 10Hz-50Hz
- ⑦ **Phase** – Adjusts timing of signal to blend sub(s) with satellites; 0°=Normal Phase, 180°=Reverse Phase
- ⑧ **Power Range** – Adjustment for limiting the maximum amount of signal that can pass to the subwoofer(s)
- ⑨ **Crossover Frequency** – Controls subwoofer upper cutoff frequency; variable from 40Hz-160Hz
- ⑩ **LFE Switch** – Used to bypass or engage internal crossover (low pass filter). All other controls remain active
- ⑪ **Bridge Mode Switch** – Used to select either 2-channel (stereo) or 1-channel (bridged) high power amplifier operation
- ⑫ **Power Mode Switch** – Selects how amplifier is turned on & off; ON=Front panel control, AUTO=Signal sensing, TRIGGER DC 12V=External voltage
- ⑬ **Trigger In/Out** – Input and output jacks for amplifier remote trigger voltage (3.5mm mini-plug)
- ⑭ **Line In Full Range** – Stereo input for full range operation (4Hz-30kHz); Bypasses precision-calibrated control panel
- ⑮ **Speaker Outputs** – 5-way binding posts provide connection for speakers, stereo and bridge mode
- ⑯ **Master (Main) Power Switch** – Primary power; ON=Power Enabled; OFF=Power disconnected from amplifier circuit
- ⑰ **Power Input Receptacle and Fuse Holder** – IEC 3-conductor receptacle accepts supplied IEC power cord
- ⑱ **Input Voltage Selector** – Selects input voltage range for 115V or 230V

GETTING STARTED

Before making any connections, ensure that power cord is disconnected or that the "Master Power" switch on the rear panel is switched to the off position.

Ensure that the "Voltage Selection" switch is set to the proper operating voltage and that a proper rated fuse is installed. See specifications at the end of the manual for proper fuse type and rating.

The amplifier is shipped from the factory with a fuse that matches the factory-selected operating voltage. For more information on the fuses, refer to the "SPECIFICATIONS" section on page 16.

Finally, turn the Master Volume Control to the minimum position, (fully counter-clockwise).

CONNECTION & SETTINGS

Note: No signal connection cable is provided with the P-500Xb amplifier since the length of cable is installation specific. A shielded RCA type coaxial cable or a shielded two-conductor wire with RCA type connectors is required for connection of the P-500Xb to the audio system.

AC Power Mode Selection

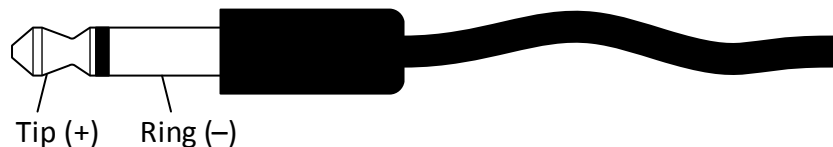
The P-500Xb can be turned on and off in one of three different ways; Manual On, Auto Signal Sensing, or Trigger Voltage. Which mode is operative is determined by the POWER MODE switch (item 12 on Page 5). Only one method at a time can be used to activate the amplifier. The front-panel power indicator will illuminate blue when the amplifier is active and red when in standby mode. There is a 5 second delay when activated.

Manual On – Placing the POWER MODE switch in the "ON" position will enable the front panel switch. The amplifier can now be switched in and out of standby mode manually using the front-panel power switch.

Auto Signal Sensing – When the POWER MODE switch is in the AUTO position the amplifier will turn On when a signal is detected. The amplifier will turn Off when no signal has been applied for approximately 20 minutes. For subwoofer applications it is common to use the "AUTO" signal sensing mode.

Trigger Voltage – When the POWER MODE switch is moved toward the TRIGGER IN and OUT connections the amplifier will be activated when a DC voltage is applied to the IN connection. This can come from a small AC/DC adapter that is plugged into a remotely operated outlet or from an audio component that provides a trigger voltage.

- The Trigger input voltage range is 3VDC to 12VDC.
- The trigger uses a 3.5mm mini-plug.
- The polarity of the trigger voltage is as follows: Tip = Positive (+), Ring = Negative (-)



- Insert the trigger plug into the Trigger "IN" connector. The Trigger "OUT" is used to pass the trigger voltage to other components.

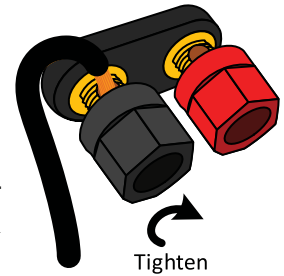
The "MASTER POWER" switch is located on the rear panel next to the AC Mains receptacle. This switch de-energizes the amplifier circuitry when it is desirable to disconnect the amplifier from AC power without unplugging it. Note, however, that AC line voltage is still present inside the cover of the equipment.

AC Power Connection

Insert the supplied AC power cable into the AC input receptacle on the back of the amplifier. Insert the other end of the power cable into the AC mains outlet.

Speaker Connection

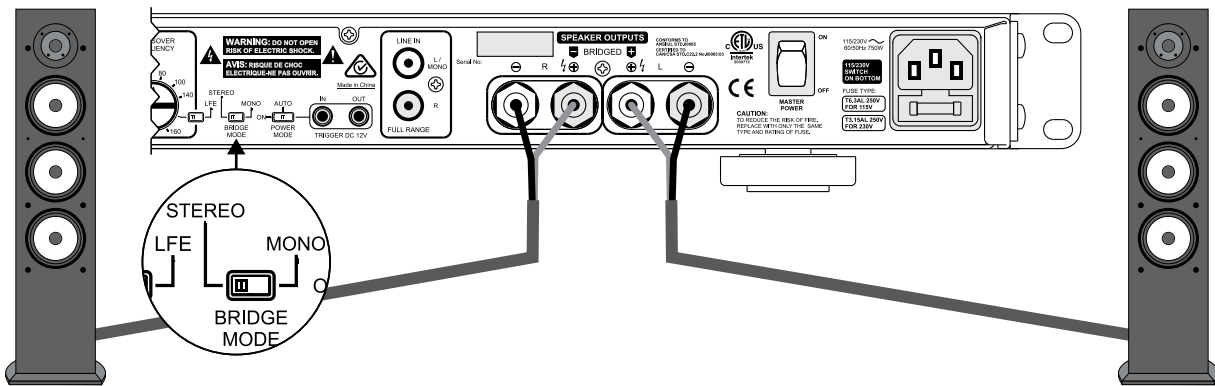
Speaker connections can be made by loosening the red and black terminal nuts, inserting the wire into the hole at the base of the speaker binding post, and then tightening the red and black nuts, clamping the wire conductor. Wiggle the wires & retighten the terminals to ensure a secure connection. Note: It is not recommended to use gold pin adapters on heavy gauge wire since they offer little surface area to pass current. Alternatively, the wire can be terminated with "banana plugs" and simply inserted into the back of the speaker connectors.



When connecting your speakers, ensure that proper polarity (phase) is maintained. Simply put, this means ensuring the wire that is connected to the positive terminal of the amplifier has its other end connected to the positive terminal of the speaker. It is important to check this on all channels. If the connections on one of the speakers are reversed, (out of phase) the quality of your bass and the acoustic soundstage will be impaired.

2-CHANNEL OPERATION

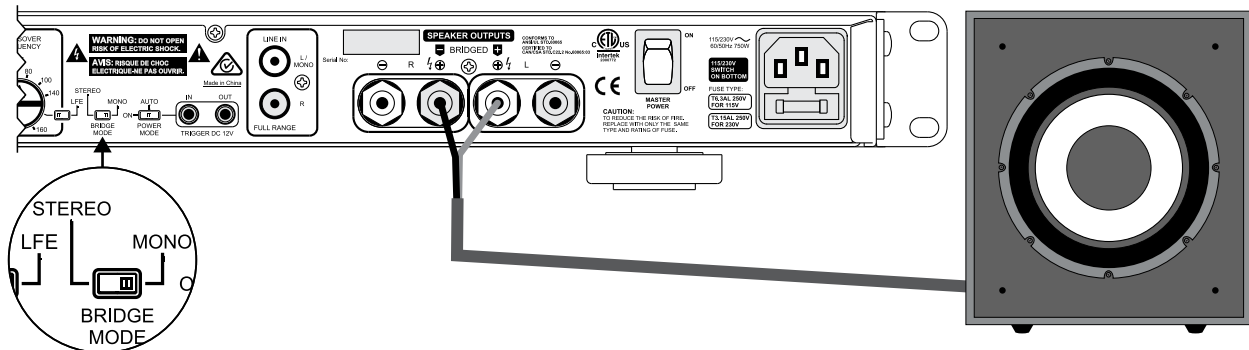
This configuration is used when two separate audio channels will drive two separate speakers or a speaker with dual inputs. The diagram below shows the output connections and switch-settings for 2-channel operation. Ensure the "Bridge Mode" switch is set to "STEREO" (item 11 on Page 5).



SINGLE-CHANNEL (BRIDGE MODE) OPERATION *HIGH POWER*****

The P-500Xb amplifier can be configured to operate as a single channel amplifier. This is commonly known as "Bridge Mode." This increases the maximum output power of the amplifier significantly. Bridge mode is useful for many high-power applications, such as, 2-channel stereo (using two amplifiers, one per channel) and for driving large subwoofers or multiple subwoofers.

The diagram below shows the output connection and switch-settings for "Bridge Mode" operation. Ensure the "Bridge Mode" switch is set to "MONO."



Note the "BRIDGED" polarity markings above the two red terminals.

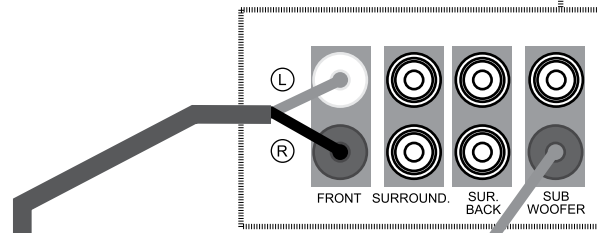
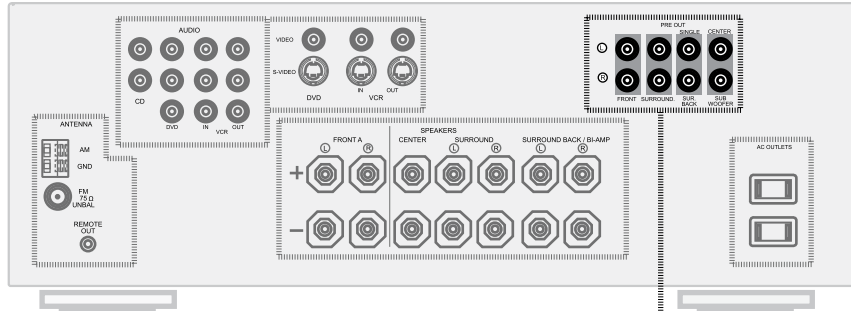
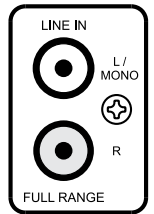


Input Connection

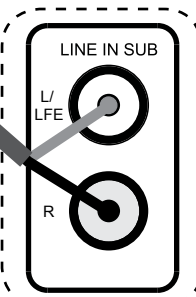
The P-500Xb has two sets of inputs, "FULL RANGE" and "LINE IN SUB." For Full-Range operation, use the "FULL RANGE" inputs located in the middle of the rear panel. This bypasses the Precision-Calibrated Control Panel.

When driving a subwoofer(s), use the "LINE IN SUB" input next to the Precision-Calibrated Control Panel. This passes the signal through the control panel allowing the amplifier to be optimized for the subwoofer(s).

NOTE: The subwoofer inputs are summed together to form a mono signal. The mono signal is independently amplified by each amplifier channel, or as a single channel when in Bridged Mono mode.

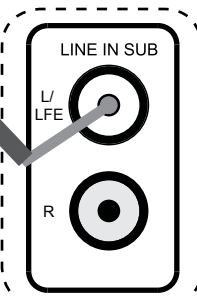


OPTION 1 (When no Sub/LFE connection is available) Connect the left and right line level front channel outputs of your receiver or preamplifier/processor to the Left/Right Line Level inputs of the P-500Xb.

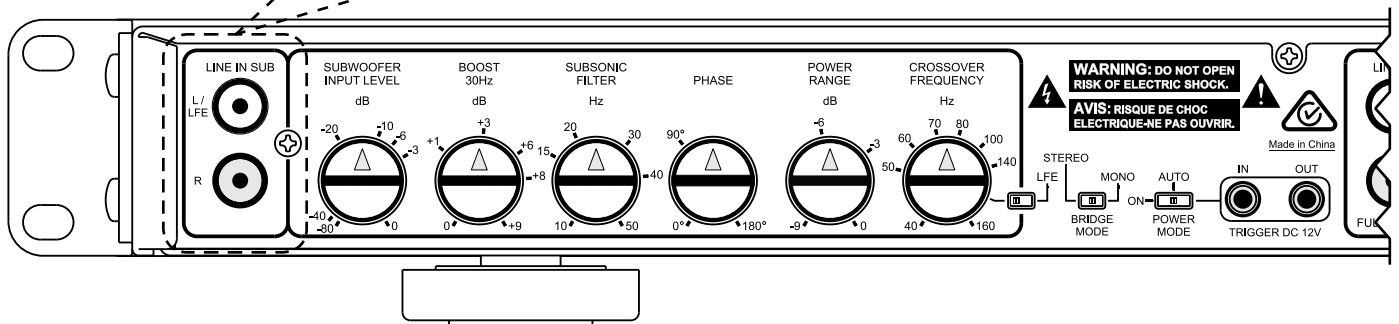


OPTION 1

OPTION 2 (When a Sub/LFE connection is available) Connect the line level LFE or Subwoofer output of your receiver or preamplifier/processor to the Left/LFE Line Level input of the P-500Xb.



OPTION 2



Subwoofer Options

Regardless of whether the amplifier is in Stereo or Mono mode, **both** subwoofer options below are valid. The one that is chosen is primarily dependent on the type of output available from the preamplifier or processor.

OPTION 1 (Left-Right Stereo)

- If an LFE (Low Frequency Effect) or Subwoofer output is available then use Option 2.
- If no LFE output is available and a line level Front Channel Output or Preamplifier Output is available, then this (Option 1) is the preferred method of connection.

Per Option 1 in the drawing on the adjacent page, connect the left and right line level front channel outputs of your receiver or preamplifier/processor to the Left/Right Line In Sub inputs of the P-500Xb.

OPTION 2 (LFE)

If the amplifier is to be connected to a modern home theater receiver or processor with an available LFE or Subwoofer output then this option will likely produce the best results. If no LFE or Subwoofer output is available but a line level Front Channel Output or Preamplifier Output is available, then use Option 1.

Per Option 2 in the drawing on the adjacent page, connect the line level LFE or Subwoofer output of your receiver or preamplifier/processor to the Left/LFE Line In Sub input of the P-500Xb.

Full Range Input Connection

When the amplifier is used in STEREO mode, the line outputs of your audio source should be connected to the left and right Full Range Inputs.

If you choose to bridge the amplifier and use it in MONO mode then your audio system should be connected to the LEFT channel input only.

PRECISION-CALIBRATED CONTROL PANEL

Using the P-500Xb Controls

The P-500Xb amplifier has 6 precision controls to manage its output to the subwoofer and for tailoring the subwoofer's output to the room and to the primary speakers. These controls are titled Level, Boost, Subsonic Filter, Phase, Power Range, and Crossover Frequency. Generally, the control with the most audible effect is the Subwoofer Input Level, followed by the Crossover Frequency, Boost, Subsonic Filter, Phase, and then Power Range.

NOTE: You may notice that the numeric values on the Precision-calibrated Control Panel are not evenly spaced. Through an extensive laboratory calibration process, the P-500Xb has been fine-tuned so that these markings represent the actual response of the controls. This allows you to more precisely tune your system.

A Word about the Numbers (Technical Stuff Explained)

Each of the P-500Xb precision-calibrated controls uses one of 3 different scales, dB (decibel), Hz (hertz), and Degrees. What do these scales represent?

dB (decibel), as used on the P-500Xb, is a unit used to describe relative volume. The most important thing to know here is that a 1dB difference in sound level is just barely noticeable and that 3dB is only a modest change in perceived sound level. It is also important to note that each 3dB increase in sound level requires a doubling of power. As an example, an increase in output power from 1W to 2W and 200W to 400W each creates an increase of 3dB in sound level. Conversely, reducing power by 50% produces a 3dB decrease.

Hz (hertz) is a unit used to describe frequency, with low numbers on the control panel representing low bass tones and higher numbers representing higher bass tones. For reference, the lowest note on a piano is the low A at 27.5Hz, and on a bass the open B-string at 30.8 Hz. The highest note on a bass is around 200 Hz, for standard tunings and fingerings. Some sounds found below these frequencies are pipe organs, synthesized sounds, and motion picture sound effects.

“Degrees” is a unit used to represent the relative time relationship between the acoustic waves that come from more than one speaker. The phase control is used to adjust this time relationship between the subwoofer and the main speakers. Since, this control is typically set by ear the actual values are not so important. You will simply adjust the phase control until you get the best response. If you're inclined, you may read the following simplified explanation of what is happening:

360 degrees, by definition, represents a full wave, which is the time it takes for the speaker cone to move from its home position, fully forward, then fully backward, and back to its home position. This is also known as one cycle. 180 degrees is a half-cycle or half-wave and 90 degrees is a quarter-cycle or wave.

At the moment a speaker cone begins moving forward, the beginning of the wave front starts. By the time the speaker cone has completed a full cycle, the beginning of the wave will now be some distance away from the cone, a distance determined by the speed of sound and the time it took for the cone to cycle. As an example, the speed of sound in air is approximately 1115ft/second or 340m/second, so the beginning of a 100Hz sound wave will travel about 11.15ft (3.4m) by the time the end of the wave cycle is complete. This complete cycle of a 100Hz tone takes 1/100th of a second.

Here is how this relates to phase.

The Phase image on page 12 graphically shows a complete 100Hz wave (360 degrees). A second (dashed) curve is superimposed with the first. If the dashed curve represents the signal from the main speakers, and the subwoofer the solid line, a subwoofer delay of 90 degrees would bring these two into time/phase alignment. The left side of the plot is the present time and everything to the right is now time past or distance. For reference, different scales are shown below the plot. These include phase, distance, and time.

GETTING TO THE BUSINESS OF SETTING THE CONTROLS

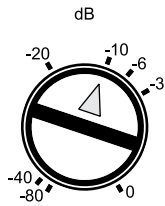
If you know the manufacturer's recommended settings for your subwoofers then you may apply these now. Otherwise, follow the instructions below for setting the P-500Xb controls.

Master Volume Control

- **Full-Range Applications:** After you've made all your connections and powered up your amplifier, increase the Master Volume Control (item 2 on page 5) to an appropriate volume level for your system. If the amplifier is used within a system that contains a primary volume control then the amplifier's master volume control can be set at, or near, its maximum position. If the amplifier's volume control will serve as the master volume then begin with the control set to its minimum position.
- **Subwoofer Applications:** Begin by setting the rear panel Subwoofer Input Level to its minimum position of -80dB (item 4 on Page 5). Then increase the Master Volume Control to, or near, its maximum position. This will ensure that you can achieve the amplifier's full output. Use the rear panel Subwoofer Input Level to set the desired volume level. The front panel control can be used to fine tune the level.

Note: When using the amplifier to drive a subwoofer, if the Master Volume Control is not set to its maximum position then you will not be able to utilize all the available power of the amplifier. (This is only true for the subwoofer input.) The Full Range signal is direct and has no limiting and no secondary level adjustment. Therefore, the Full Range Inputs can, and very likely will, achieve full output before the Master Volume Control is at its maximum position.

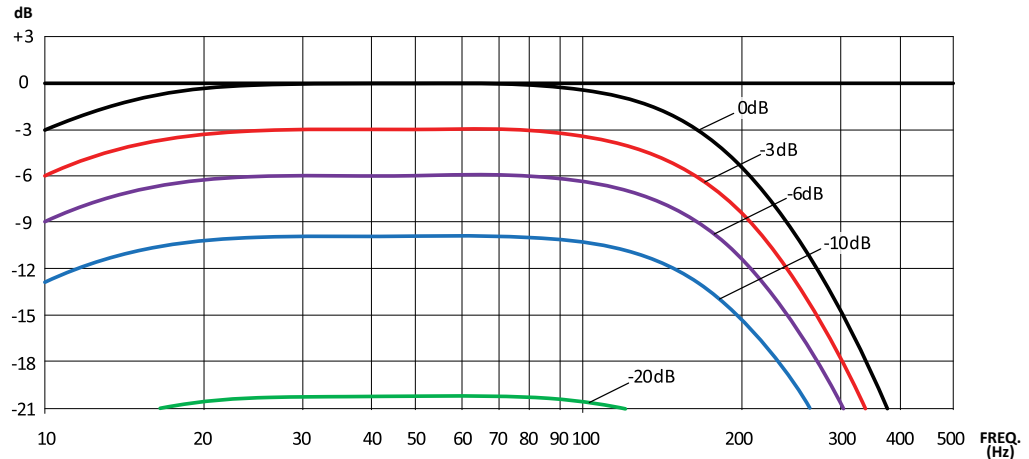
Subwoofer Input Level



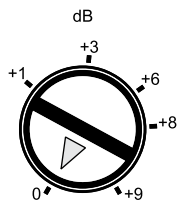
If you are driving the amplifier with the LFE or subwoofer output of a home theater system then set the Subwoofer Input Level between -20 and -10dB. This will provide enough control range to ensure that the amplifier can reach its full output. Once the system is active, adjust the level so that the bass sounds balanced with the other speakers. If using the room-correction routine available in more advanced home theater receivers, the above starting position may be used but the correction routine may prompt you to change the level.

If you are driving the amplifier with the left & right line level output from a stereo receiver (or similar) then begin with the Subwoofer Input Level set to its minimum position (-80dB). Once all the other controls are set then begin playing musical content through the system and increase the Subwoofer Input Level until there is sufficient bass to blend well with the main speakers.

NOTE: For subwoofer applications only, if you need to increase or decrease the output of the amplifier, use the Subwoofer Input Level control. Leave the front panel Master Volume Control at or near its maximum position and use it only for small adjustments in subwoofer output.



Boost 30Hz

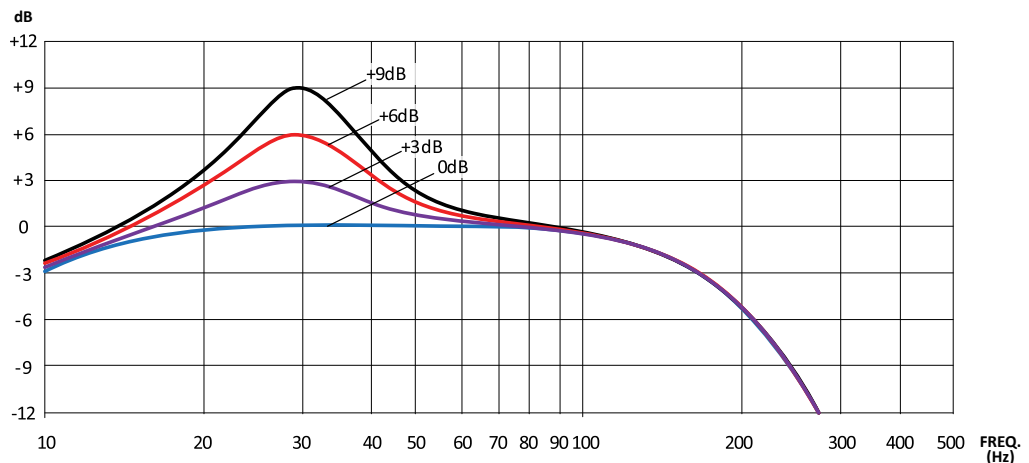


Set this control to 0dB as an initial setting. If you know the manufacturer's recommended setting for this control, or you know from your subwoofer's design, then set it now. If this information is not available, then experiment with the control once your system is active. This setting will add low frequency emphasis.

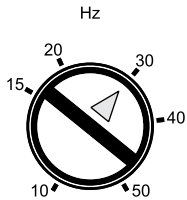
CAUTION: This control can add significant demand to smaller woofers. Observe the woofer's cone for excessive excursion (motion) and listen for strained output at high output levels.

When is boost required? Most often boost is required for sealed subwoofers of nearly any size. This allows for low frequency extension similar to vented systems.

Vented systems often don't require boost, except in small amounts dictated by room acoustics or with specific designs. Check with the subwoofer's manufacturer for system requirements.



Subsonic Filter

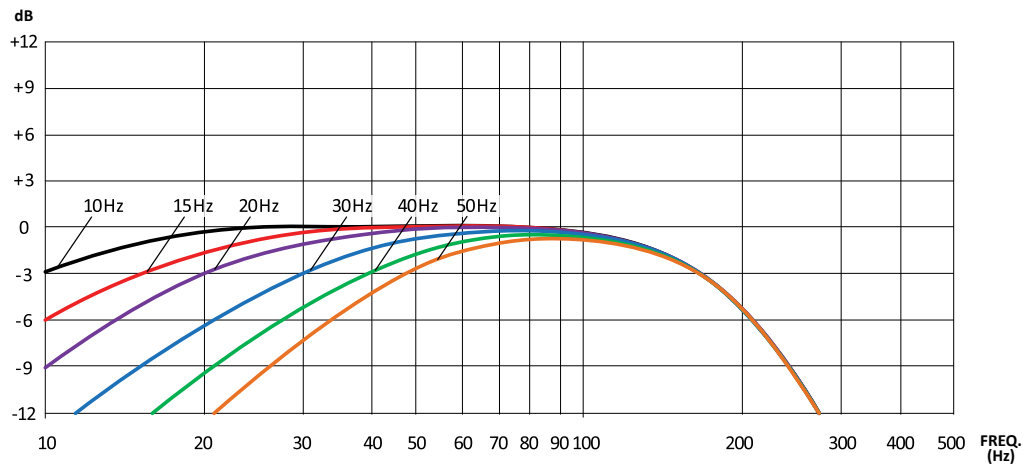


In some systems, it is not practical to reproduce the lowest bass frequencies, either because of the application or because the speakers are not physically capable of reproducing very low frequencies without causing damage or strain to the speaker.

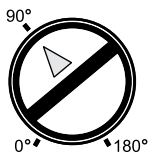
This control is used to reduce the amplifier's lower frequency output and to preserve the power for other reproducible frequencies. It can also help to protect subwoofers from damage, especially in vented systems where the woofer's excursion becomes very large below the system tuning frequency. If you know the vented system tuning frequency then set this control to a value at or just below this.

For sealed woofers, this control is not as important, except where the woofers are small and the enclosure large. For most sealed systems, this control can be set between 10Hz and 30Hz. Where a woofer is used in a wall or ceiling without an additional back-box, such woofers should be considered as having a large box.

NOTE: If you find that the subwoofer looks or sounds physically strained at high output levels and when reproducing low frequency content then you may wish to increase the cutoff frequency. Alternatively, the Power Range control can be reduced.



Phase

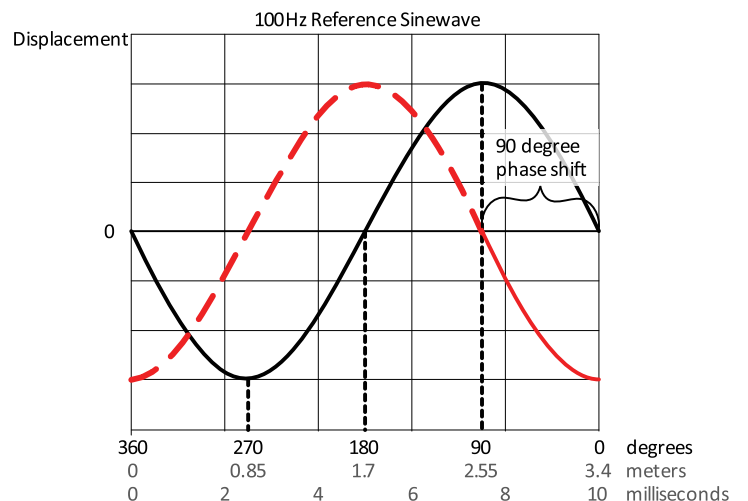


Begin with the control set to 0 degrees. Use various pieces of music with a broad range of bass content. Rotate the Phase control back and forth across its range and listen in particular to the presentation of the upper and middle bass frequencies, where the woofer crosses over to the main speakers. Listen for this level to increase and decrease slightly. Rotate the control to the position that gives you the best overall response. Ideally, this is the setting where the bass sounds the most defined and most coherent. It may be helpful to have someone else adjust the control while you are at the optimum listening position. Make large 90 degree changes if the effect is not immediately apparent.

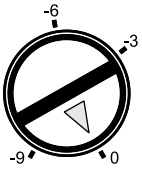
When the amplifier is used as part of a home theater system, where room-correction digital signal processing (DSP) is used, this control should be set to 0 degrees. The DSP should determine the optimal phase response for the subwoofer.

Note: The effect of the Phase control is less noticeable than most of the other controls. Some may have difficulty hearing changes in adjustment. Be patient and take time to get used to the way your system sounds before adjusting this control. It will become easier to hear the effects of the Phase control as you become more familiar with the sound of your system through many hours of listening.

More information on the operation of this control may be found in the "Degrees" section on page 10.



Power Range



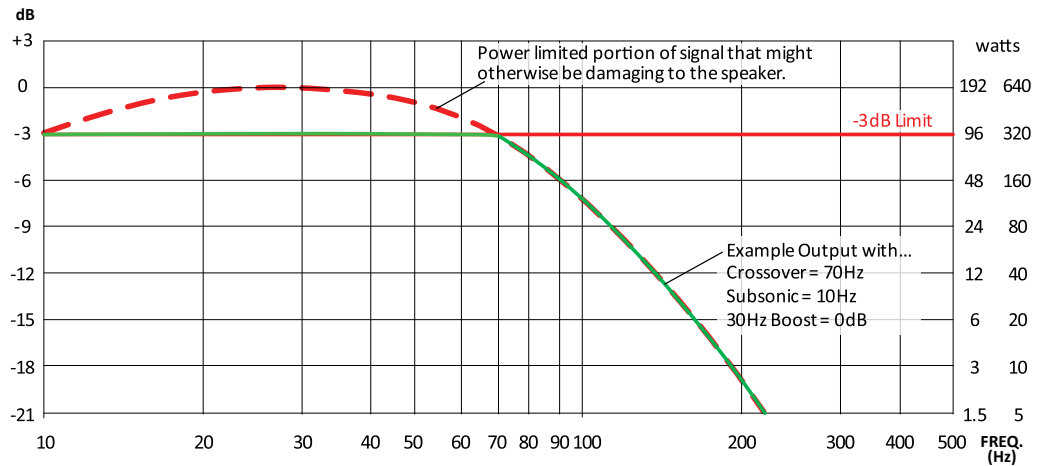
This control sets a limit to the amount of power that can reach the subwoofer. It has no audible effect at normal listening levels, though its effect may sometimes be heard as a slight change in bass character at very high volume levels. Limiters, as they are commonly known, are used in virtually every powered subwoofer made. They are internal devices that are preset by the manufacturer to provide safe operating levels for the subwoofer and to mitigate distortion at high output levels.

The position of this control can be set by determining the maximum amount of power that your woofer(s) can handle and adjusting the control so that the output of the amplifier matches this maximum.

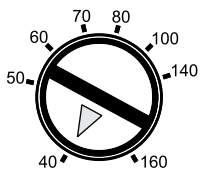
NOTE: Each 3dB decrease correlates to a 50% reduction in output power. The chart below provides the approximate amplifier output for 4 and 8 ohm speakers with different settings. More information on the operation of this control may be found in the 'dB (decibel)' section on page 9.

Power Range	Stereo		Mono (Bridged)	
	4-ohm Peak Power	8-ohm Peak Power	4-ohm Peak Power	8-ohm Peak Power
0dB	180W	120W	700W	440W
-3dB	90W	60W	350W	220W
-6dB	45W	30W	175W	110W
-9dB	22.5W	15W	87.5W	55W

The diagram below shows the effect of setting the Power Range to -3dB. The power levels shown at the right are approximate for stereo and mono (bridged) operation.



Crossover Frequency



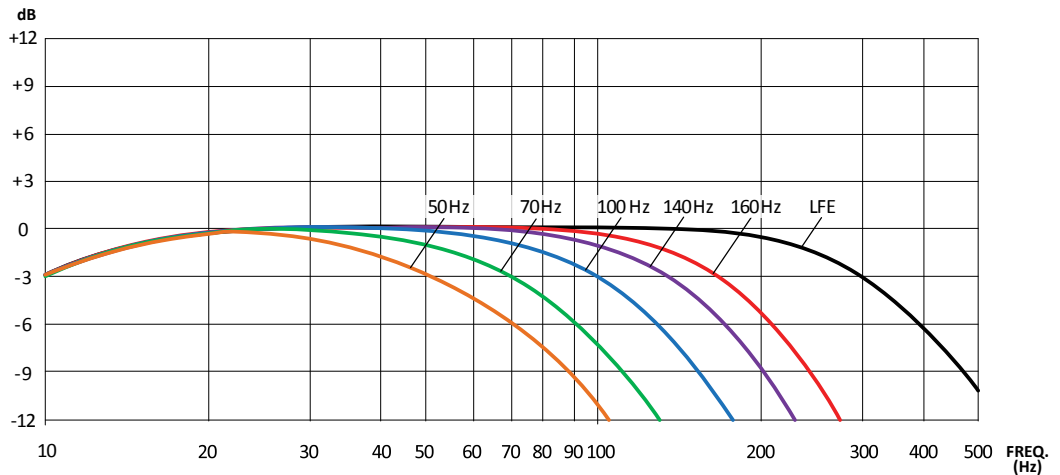
And LFE Switch

This control sets the upper cut-off frequency to the subwoofer. The control is continuously variable from 50Hz to 160Hz. The filter provides a 12dB/octave rate of roll-off. The effects for a range of values can be seen graphically in diagram below.

If the amplifier is driven from the left and right line-level outputs of an audio system, (not driven from an LFE or Subwoofer output), then the LFE switch should be switched to the left, toward the Crossover Frequency control. The Crossover Frequency should be set near the lower operating limit of the main speakers or at a desirable cut-off frequency. For most systems, this will be between 60Hz and 80Hz.

It is rare to use a cut-off frequency above 100Hz unless the main speakers are very small.

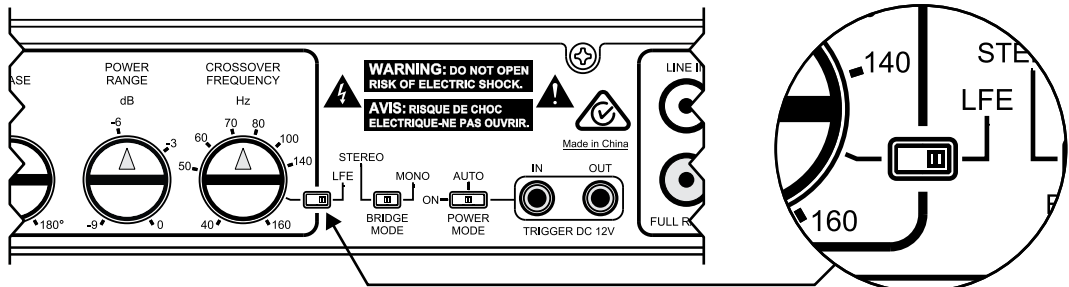
Alternatively, you can begin with the control set to approximately 100Hz. Play some familiar music through the system (music with a broad range of bass content) and increase the Subwoofer Input Level until the bass passages sound robust or exaggerated. Then adjust the Frequency control to blend the subwoofer with your main system speakers. In many cases, the control will have a final value between 60Hz and 80Hz.



Readjust the Level and the Frequency controls (up or down) as necessary until the bass sounds full, extended, and natural. Use multiple musical pieces to test the system while fine tuning the controls. If it sounds like your subwoofer is always producing the same bass note with different recordings it is possible that the bass level is adjusted too high.

If the amplifier is driven from a home theater system's LFE or Subwoofer output, then the Crossover Bypass switch should be set to the "LFE" position. The P-500Xb will now pass signals up to approximately 300Hz to the subwoofer. The cut-off frequency will then be set internally in the home theater system.

Alternatively, if the receiver or processor uses a 12dB per octave roll-off, then the LFE Switch may be set to the left so that the crossover is engaged. This cascades the P-500Xb crossover with that of the receiver for a steeper 24dB per octave roll-off. For this application, the crossover frequency of the P-500Xb should be set at or a little above the frequency of the receiver or processor.



Note: When the LFE mode is engaged, all other controls on the P-500Xb remain active and will still function as indicated.

A Short Primer on Low Frequency Acoustics

The P-500Xb controls will allow you to make the best of virtually any installation. If you feel uncomfortable with setting up your P-500Xb after reading through this manual then you should consider enlisting the help of an experienced person or contacting your dealer.

Below are a few generalized rules for understanding the acoustic nature of low frequency sound reproduction in an average residential listening room. These rules will aid in establishing the best placement of your subwoofer(s) and the tuning of your P-500Xb amplifier. Experiment with the adjustments of your P-500Xb to determine what works best in your listening room. Every room is different.

Almost every room has significant resonant modes at low frequencies. The listener will experience these resonant modes as a variation in the intensity of certain bass frequencies at different locations within the room. Resonant modes are the result of reflected acoustic energy interacting within a room's boundaries. The resonant modes can produce large errors in the frequency response and reduce the quality of the audio reproduction. Equalization cannot simultaneously compensate for all locations within a room. However, large physical elements, such as furniture, within or at the room's boundaries can effectively improve the room's behavior. Subwoofer placement also has an effect on the excitation of the resonant modes and the way they are experienced. Contacting an expert in the field of acoustics can be worthwhile if one finds that the low frequency reproduction in their room is unsatisfactory or if one wants assistance in optimizing their installation.

Placing a subwoofer on the floor near a wall will increase its radiating power by as much as 2X. Placing a subwoofer on the floor near the intersection of two walls (a corner) will increase its radiating power by as much as 4X. Corner loading, as it is sometimes called, is an excellent way to get greater acoustic output from a subwoofer.

In the same way that the subwoofer's output is augmented by a corner, the listening position can also have a significant effect on how the bass is experienced. For instance, the bass level will be noticeably stronger at a room's boundary, such as near the back wall of a room, and even more so in a corner. A walk around a room while listening to bass-rich musical content will reveal a lot about the room's behavior.

Placing a subwoofer close to the listening position (less than 5ft (1.5m)) - like under an end table or behind a couch - can increase the impact of the transients and reduce the acoustic power demands from the subwoofer. Placing the subwoofer close to the listening position can also create more tactile sensation. Experiment with placement and see what you like best.

Bass frequencies below about 80Hz are considered to be omnidirectional and tend to have no localization. That is to say that it is difficult to determine their place of origin. For this reason, placement of most subwoofers is not limited to the front of the room. However, in practice this is not always the case. There are cues such as tactile and audible vibration and higher frequency signal content that can suggest the direction of the source. For this reason it may be desirable to locate the subwoofer(s) at the front of the room. It may also be necessary to reduce the crossover frequency below 80Hz if one finds that the bass sounds too detached from the other sound sources.

Placing a subwoofer(s) at the back of the room is also a good consideration especially if placement of a subwoofer at the front of the room is not suitable or produces poor results. Placement directly behind or beside the listening position can produce very good results as well as corner loading in the back of the room. Other options include placing the subwoofer(s) on the side(s) of the room especially when multiple woofers are used.

Symmetrically or asymmetrically locating two or more woofers in the room is an excellent technique to reduce or change the room mode effects and to balance the localization of the sound. Experimentation can be useful here.

It is not necessary to direct the front of a subwoofer at the listening position.

SPECIFICATIONS

Replacing the fuse

The fuse can only be replaced by removing the power cord from the AC input receptacle on the back of the amplifier. This is a safety feature that reduces the risk of electrical shock. Remove the power cord from the AC input receptacle on the back of the amplifier. Use a flat blade screw driver or your finger nail to release the fuse holder at the base of the receptacle. The fuse holder slides open like a drawer.

Note: The fuse holder does not come completely out of the receptacle. Drop the fuse out of the bottom side of the fuse holder.

Replace with only the size and type of fuse required for the selected operating voltage. The proper fuse sizes are listed in the Specifications section below and on the rear panel of the amplifier next to the AC input receptacle.

- **Frequency Response:** 4Hz – 30kHz (-3dB)
- **Crossover Frequency:** 40Hz – 160Hz (Low-pass filter with "LFE" bypass switch)
- **Phase Adjustment:** 0 – 180 degrees (Continuously variable)
- **Rated Output Power**
@ 1kHz, <1% THD: 150 watts RMS per channel into 4 ohms
90 watts RMS per channel into 8 ohms
500 watts RMS bridged into 4 ohms
300 watts RMS bridged into 8 ohms
- **Peak Output Power**
(@10% THD): 180 watts per channel into 4 ohms @1kHz
120 watts per channel into 8 ohms @1kHz
700 watts bridged into 4 ohms @100Hz
440 watts bridged into 8 ohms @100Hz
- **Distortion**
(at 1/10 rated output power): <0.05%
- **Audio Inputs:** Stereo summing subwoofer line level (RCA x2)
Full Range stereo line level (RCA x2)
- **Input Impedance:** Line Level – 18kohms, Unbalanced
- **Input Sensitivity:** LINE IN FULL RANGE – 1V (800mV Bridged)
Line IN SUB – 375mV (180mV when both inputs are used together)
- **Input Power:** 115V – 230V, 50Hz -60Hz AC
- **Input Power Connection:** IEC 3-wire receptacle with integral fuse holder
- **Power (Mains) Fuse:** 115V Fuse = 6.3A 250V GMA style Fast Blow (FOR 115V ONLY)
230V Fuse = 3.15A 250V GMA style Fast Blow (FOR 230V ONLY)
- **AC Power Modes:** Manual on/off, Auto signal sensing, and External voltage trigger
- **Auto Off Delay:** ~20 minutes
- **Dimensions:**
(with feet, without ears) 17.75" W x 2.2" H x 14.6" D, (450W x 55H x 370D)mm
- **Weight:** 10.4lbs (4.7kg)
- **Shipping Dimensions:** 21.5" W x 4.9" H x 17.1" D, (545W x 125H x 435D)mm
- **Shipping Weight:** 13.3lbs (6kg)