

# Owner's Manual

---

**HD8**

**HD10**

Powered Subwoofers



**psb**  
SPEAKERS

# CONTENTS

- I. Important Safety Instructions
- II. Introduction
- III. Warranty Registration
- IV. Cabinet Care
- V. Room Acoustics, Subwoofer Placement, Multiple Subwoofers and Setting the Controls
- VI. About Bass Management
- VII. Quick Start
- VIII. Features, Controls, AC Power (Figure 1)
  - Bass Level
  - Trigger Input Jack
  - Crossover Control
  - Phase Control
  - Stereo Low/Line Level Jack
  - LFE Input/Output Jacks
  - High/Speaker Level Terminals
  - Amplifier Panel
  - On/Standby Indicator Lights
  - AC Power Socket
  - AC Power Connection
  - Power Switch
  - External Fuse
- IX. Connecting The Subwoofer To Your Audio System
  - A. Connecting Home Theater Equipment
  - B. Connecting Stereo Equipment Using Low/Line Level
  - C. Connecting Stereo Equipment With High/Speaker Level
  - D. Using Multiple Subwoofers
- X. Set-up Calibration
- XI. In Case Of Problems
- XII. Specifications

## I. Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. 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.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. 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.
14. **WARNING:** To reduce the risk of fire or electric shock, this apparatus should not be exposed to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.
15. To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.
16. The mains plug of the power supply cord shall remain readily operable.



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.



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.

### Notes on environmental protection



At the end of its useful life, this product must not be disposed of with regular household waste but must be returned to a collection point for the recycling of electrical and electronic equipment. The symbol on the product, user's manual and packaging, point this out.

The materials can be reused in accordance with their markings. Through re-use, recycling of raw materials, or other forms of recycling of old products, you are making an important contribution to the protection of our environment.

Your local administrative office can advise you of the responsible waste disposal point.

## II. Introduction

PSB subwoofers are designed to provide the flattest possible frequency response, full bass extension, low distortion and high output. Frankly, these are characteristics that most manufacturers would strive for. Our years of experience and our sophisticated design and measurement tools allow us to achieve ideal subwoofer performance. Beyond these characteristics there are a few other parameters that we uniquely feel are very important in the design of a subwoofer. First and foremost it is important to us that a PSB subwoofer be musical. In this era of home theater this might at first seem out of step, but we believe that a musical subwoofer will also sound the most natural when playing movie soundtracks.

Achieving high performance in a compact subwoofer poses serious design challenges. In theory increasing the woofer's moving mass, to counteract the stiffness of the air within a small enclosure volume, along with upping the amplifier power to counteract the attendant loss of sensitivity are all that are required to achieve high performance in a compact subwoofer. In reality shrinking the system makes every aspect of design much more difficult. A ported box design which gives lowest distortion is virtually impossible as the vents need to be large in area and considerably longer. They would quickly consume the precious volume of the box. Passive radiators will achieve what ports achieve in a larger box, but high mass is required and high excursion must be allowed for. The woofer also needs both incredibly high mass and equally high motor strength to offset the acoustic "stiffness" of the air within a compact enclosure volume. An amplifier with the highest wattage of any PSB subwoofer amplifier ever assures that amplifier drive is not a limiting factor. Since all of these components have to be more robust than with conventional designs their cost and mass increase. In the end the PSB HD subs are constructed with rugged and heavy components masterfully squeezed into a small enclosure volume. For this reason we've chosen to name the new models our HD Subs for "High Density". In the end the musicality our subwoofers are known for is also preserved, so HD could also stand for "High Definition".

An ideal subwoofer should have the ability to maintain accuracy even under conditions of overload or stress. No subwoofer is so large with its limits so great that it can never be overloaded, especially with modern movie soundtracks. For this reason PSB subwoofers incorporate very intelligently applied proprietary limiting circuitry to prevent audible overload.

The limiting circuitry of all PSB subwoofers is a combination of peak limiting circuits that hold amplifier signal swing to the point just short of the amplifiers clipping, and compression circuitry that will come in under conditions of long term overload and reduce the amplifiers gain. The trick is to apply these circuits in such a way that they don't squeeze the life out of the music or movie soundtrack, they must allow the dynamics to get through while preventing gross distortion. We do this by being mindful of the dynamics of music and carefully tailoring the time constants of the circuits to that of music. For example, it is known that most music is performed with a beat of 80 to 140 beats per minute. Our test signals are configured to follow this timing and allow maximum transient effect without distorting on sustained tones.

We go to great lengths to reduce any mechanical noises our subwoofers may make. For example our woofers are designed never to bottom harshly. Woofers and passive radiators are designed to maintain high excursion without rubbing ticking or creating air noises. Cabinets and amplifiers are designed so that no air leaks (which

can contribute minute amounts of noise) are possible. All of our designs are exhaustively tested. A subwoofers design isn't complete until all components can survive a 15 hour test of being driven continuously to maximum output.

### **Amplification**

As in all other current SubSeries subwoofers, these subwoofers utilize a high efficiency high power class H power amp. Briefly, audio amplifiers are inherently inefficient because they are designed to have the capability of delivering great output power yet spend most of their life delivering fairly low power. Their output devices must deliver current while withstanding the high power supply "rail" voltages needed for peak outputs. With a Class H design the rail voltages are not constant. They swing high when the music demands it and stay low during quiet passages. This is achieved by a sophisticated music modulated high frequency switching power supply. Power dissipated as heat is greatly reduced and more power is available per dollar of cost. A second benefit is that they tend to have high peak power relative to their steady state power. The HD10, for example, has 750 watts continuous but is capable of over 1000 watt peaks. The result is a subwoofer capable of the great transients required by dynamic music and explosive sound effects. The HD8 and 10 offer the latest most efficient implementation of this special Class H technology.

The HD subwoofer's heavy passive radiators are mounted in a dual opposing design to drastically reduce cabinet vibrations. For lowest bass notes, an opposed force would be exerted by a single passive radiator. This force attempts to move the cabinet opposite the radiators movement. By mounting the dual passive radiators on opposing cabinet faces, the reaction forces nullify each other and no energy is lost due to these forces acting on the cabinet. Residual force from woofer movement may still impart some vibration to the cabinet. In our early testing we noted that, at maximum levels, the cabinet would tend to "walk" along the floor. We solved the problem by designing special compliant feet with enough "give" to absorb cabinet vibration and keep the HD Subwoofer in one place.

Severe duty aluminum cast baskets, very large magnet structures, and high power voice coils allow the HD8 and HD10 to effortlessly churn out low frequencies at foundation shaking levels and to do so for years to come.

Whichever PSB subwoofer you have chosen, we hope that you appreciate the attention to detail that has gone into its design and, of course, that you enjoy using it. Please take the time to read the following sections about the placement of your subwoofer, and its connections and adjustments.

### **III. Warranty Registration**

We recommend you take a few moments now to register your warranty, preferably on-line at [www.psbSpeakers.com](http://www.psbSpeakers.com) or via the enclosed registration form so that we will be able to serve you better in the future.

### **Unpacking**

The packing materials of your PSB HD Subwoofers are designed to protect them from damage during shipping. Retain the packaging in case the need arises to transport the speakers in the future.

## **IV. Cabinet Care**

Cabinets have varying materials and finishes, including painted wood, perforated metal and rubber passive radiator and trim parts. They should be treated as you would any fine component with similar finishes. Dust lightly with a soft cloth; avoiding abrasives. If necessary, wipe carefully with a cloth slightly dampened with glass cleaner to remove heavy soil.

## **V. Room Acoustics, Speaker Placement, Multiple Subwoofers and Setting Controls**

### **Room Acoustics**

If you are critical about low-frequency response, there's quite a bit of useful experimentation you can do, especially in combination with the crossover, level, and phase controls of our subwoofers.

Since the earliest days of high fidelity, one of the main challenges for the designers of speakers, and of their users, has been the generation of the lowest frequencies—the deep bass. Many of the most notable developments in speaker design have been made with a view to getting more bass output from smaller boxes.

One consideration is the size of the listening room. The larger the volume of air a speaker must excite, the more acoustic output you will require from it to achieve the sound levels you want. In any environment, sounds attenuate as you move farther away from their source, but in smaller rooms that tends to be offset by reinforcement from wall reflections. The larger the space is, the farther the sound has to travel both to reach the reflecting surfaces and then to get to your ears, which means it has to be louder to begin with.

With traditional full-range speakers, that involves an intricate matching act between amplifier power, speaker sensitivity, impedance and power handling. But the bulk of the power goes to reproducing bass, so the use of powered subwoofers and separate midrange/treble satellites both allows you to be conservative in the amount of power your main amplifier produces, and ensures a good match between the low-frequency amplifier and the woofer it is paired with.

After size, the most important aspect of a listening room is its shape. In any room, sound reflects off the walls, ceiling, and floor. If the distance between two opposite parallel surfaces is a simple multiple of the wavelength of a particular frequency, notes of that frequency will bounce back and forth in perfect phase—an effect called a standing wave or room mode.

At some points in the room, this note will be reinforced substantially; at others it will cancel out almost entirely. If the prime listening seat is placed at either of these locations, the note will be a horrible boom or virtually non-existent. The standing waves are different between floor and ceiling, side walls, and end walls, unless any of these dimensions are the same. An ideal listening room would have no parallel surfaces—an unusual situation, to say the least—so that such waves would not establish themselves. The worst kind of room is a perfect cube.

Almost all rooms are susceptible to some standing waves at low frequencies, but their effects can be minimized by careful positioning of both the speakers and the listening seat. Moving either of these even a few inches is sometimes enough to cure—or create—an intolerable sound. The only way to find out what works best is by experimentation.

With full-range speakers, the range of places you can put the speakers and still get proper imaging may be fairly limited, and some of these positions may result in standing waves that can't be tamed. Things are more controllable through the use of a subwoofer or two. Positioning of the bass speakers has almost no impact on imaging, so a subwoofer can be located with only standing waves in mind

## **Subwoofer Placement**

There is no argument among audiophiles that the loudest bass output from a subwoofer comes from corner placement. The natural megaphone-like flaring outward of walls from a room corner focuses low frequencies—giving them no place to go but toward you. In the case of subwoofers, there is no automatic penalty in giving overall balance for this maximal bass, since your main speakers can be located elsewhere. It still may be too much bass for your room or (more particularly) your favorite listening spot in the room, but unless you are seated in a “null” spot, where sound from the sub is cancelled or diminished by out-of-phase reflections from elsewhere, there should be plenty of bass from corner placement.

If you are seated in such a null spot, your only real choices are generally to move either the subwoofer or your listening position until bass returns to the point that satisfies. Cranking up the level control or changing the crossover point almost certainly won't help much. But rotating the variable phase control 180 degrees sometimes may make a difference, especially if the null is a product of cancellations caused by interaction with low frequencies from your main speakers.

If you are in the opposite sort of situation, where direct and reflected bass waves converge in phase and produce a strong peak at your listening location, you can—if you like—deal with that both with changes in placement or in the position of your sub's level control (or, less likely but possible, the crossover frequency chosen). We say “if you like” because there is no such thing as too much bass for some listeners, and we don't want to be dogmatic. You are definitely the one who has to be pleased, unless your Significant Other chimes in to the contrary.

As you go outward from the corner along one wall or another, the general consensus (with which we tend to agree) is that while bass output diminishes somewhat, it also becomes more uniform throughout the room, with fewer of the “standing waves” that produce peaks and nulls at various points.

Chances are things won't be so simple, so the best method for positioning a subwoofer, although a rather undignified-looking one, is to put the subwoofer in your listening chair, then play music with lots of bass through the system something with steady low frequencies (such as organ music) or continuous test tones, not movie material. Move around the room and note where the bass sounds best; if you place the subwoofer there and yourself in your chair, you should get the same bass performance. Bear in mind that the test only works if you have your ears as high off the floor as the subwoofer will be, so don't be afraid to crawl around. A recommended starting point for the placement of this subwoofer would be in either of the front corners of the room (on either side of the main speakers).

Rather than mounting your HD Sub in the open you might choose to mount it within a cabinet or “wall unit” intended for hiding away the components of your home theater. When cabinet mounted a few extra details must be attended too. The woofers on the HD Subs are placed on the front face and the passive radiators on the sides where they can all be placed reasonably close to a “sonic exit” of the cabinet. The cabinet may have a front door with a grille (cloth or latticework). It may also have a solid front

as long as a substantial slot (typically 4" by 17" or more) is near the woofers. The best location for this slot would be at floor level in line with the area to the front of the cabinet. An inch or so of space between the front firing woofer and the cabinet front will create enough of a channel for the bass to get down to a floor level slot.

If an HD Sub is within a cabinet, special attention should be given to preventing rattles from strong bass tones. Rattles can be found by repeatedly playing a selection with a variety of strong sustained bass tones. Action movies with a lot of LFE (low frequency effects) content can be helpful as well. With the other speakers down, turn the level up to the highest level likely to be encountered and listen closely for rattles. If they occur, find the cabinet panels that are causing the rattle. Usually a joint or contact area between two surfaces is vibrating and this is the cause of the rattle. Some foam tape or the commonly available self adhesive felt discs, placed between the offending surfaces will damp the rattle. Absorptive material, such as fiberglass, may help damp internal resonances of the cabinet's cavities, but it will need to be quite thick to have significant effect. Filling the full cavity above the subwoofer can give a significant improvement, just be sure that the woofers and their bass exit path are not obstructed. Although it normally runs cool, be especially sure that any heat generated by the rear amplifier has an exit path and that no materials are in contact with its metal surfaces.

### **Multiple Subwoofers—Why Two Subs Are Better Than One**

Since the objective of most people who buy subs is to make sure of plentiful low frequencies, the only situation most of us will run into that makes subwoofer placement really difficult is the factor we all fear—the “bad” room that just won't let you get satisfying amounts or quality of bass. There are rooms with troublesome dimensions, especially as you approach a perfect cube (with closed doors and no other natural openings). There is unlikely to be any combination of speaker and listener position that will be free of obvious acoustic anomalies.

In such a case, the best way to iron out those anomalies is with two subwoofers, placed carefully to work with each other. This can also be true when the problem is too much, or too uneven, bass. Recent studies have proven that 2 subwoofers carefully placed will give more even response over a listening area. These studies show that mounting one woofer in the center (at floor level) of the front wall, balanced by the second woofer in the center of the back wall will usually give a best solution. Alternatively, having one woofer at the center of the left wall balanced by a second woofer centered on the right wall will give similarly good results.

### **Setting the Subwoofer Controls**

Once a reasonably smooth response has been achieved by careful positioning of the subwoofers, the overall performance can be further improved by means of the controls found on the speaker. An important one is the low-pass filter, which controls the upper limit of the subwoofer's frequency range. This should be set high enough to overlap the low frequency cutoff of the satellite speakers, but not high enough to localize specific sounds from the sub.

If the frequency response of your satellite speakers is such that the subwoofer's low-pass filter must be set higher than about 80Hz in order to avoid gaps in the overall system response, then you might well be able to localize specific sounds from the sub. This can be very distracting when these sounds appear to come from beside or behind you. One solution is to make sure the subwoofer is in the front of the listening area; another is to use multiple subwoofers to make such sounds more diffuse.

Subwoofers also offer a phase control so the upper frequencies they produce will not cancel out the lower frequencies of the satellites. A judicious tweaking of this control can pay major dividends in spectral smoothness in the crossover area. Phase changes with frequency, however, so these controls may need readjusting every time you vary the cutoff frequency. Section X details the adjustment of this and other controls.

Also adjustable is the overall level of the subwoofer's output. Many users tend to set this too high at first, in an effort to achieve truly impressive bass. Again, smooth response is the aim, and it may well be that, if you use them, two subwoofers end up being set differently—if, for example, one is in a corner and the other is not. It's all part of the overall-balancing act that is bass management in real rooms.

We get virtually no inquiries about subwoofer placement from customers, which is a good indication that it's not something over which people lose much sleep. A good subwoofer is such a pleasure when used with a good main speaker that enjoyment is definitely the rule.

## **VI. About “Bass Management”**

As home theater systems became more complex with numerous options for subwoofer connections and bass adjustments coming into play, the term “Bass Management” has become common. A little explanation of the subject is in order before we proceed to connecting and adjusting your subwoofer.

If you are playing a movie soundtrack on a DVD it probably contains a 5.1 channel audio soundtrack. This means that AC3, DTS or other processing is used to encode 5 main channels (3 front speaker channels and 2 surround channels) and a “.1” channel, more properly referred to as a “Low Frequency Effects” channel. This later term comes from Cinema practice where, some years ago, movie theater owners asked for a separate sound track for the explosions and effects of action movies. Those who were willing to spend the money would add a low frequency effects speaker (a subwoofer) to their system and play back the effects track. “Normal” bass, say from dialog or music would still be sent to the original behind-screen speakers. For the full impact of a movie in your home theater you obviously want to send this .1 channel to your subwoofer.

Note that the other 5 channels are also full range channels. Although they may not contain explosions or other rumblings they probably have bass content from the movie's background music and dialog. Here you have a choice to make. Do you want to keep that bass content in its respective channels or filter it out, combine it into one channel and send it the subwoofer? Some aspects to consider are the size and power handling of your main speakers. If your mains are fairly small then you will get a great power handling and bass extension benefit from sending the bass of the 5 main channels to the subwoofer instead of to the smaller main speakers. If, on the other hand, your main speakers are larger and you are satisfied with their bass performance for most music, you could configure your subwoofer in such a way that it handles the heavy lifting of the movie's .1 soundtracks *only*. We generally recommend the former approach (sending all bass to the subwoofer) since the bass power handling and bass extension of a PSB HD Sub is probably much greater than that of the typical front channel loudspeaker.

However you choose you will have to study the manual of your AV Receiver/Surround Processor for the settings that must be made with it. Look for a

similar explanation of bass management or terms such as designating speakers as “large” or “small”. “Small” is a code word for “send my bass to the subwoofer”. Note that you can typically set this channel-by-channel and might conceivably set Left and Right Channels to “large” and Center and Surrounds to “small”.

If you are adding an HD Sub to a 2 channel music system then clearly you will want it to take over all bass duties and will connect it in a way that filters bass from the front channels. Some will advocate running front speakers full range and then using the subwoofer in addition for bass extension (perhaps with a very low crossover frequency setting) but we would recommend that you steer clear of this approach. An HD sub will improve the power handling of all but the largest systems and there are pitfalls (the possibility of bass cancellation) when subs and mains share bass together.

## **VII. Quick Start**

If you cannot wait to hear your new PSB subwoofer: Turn off all other components, and follow one of the connection diagrams. Connect the supplied power cord to the AC power socket. Set the PSB subwoofer Bass Level control to its minimum position (counterclockwise), then plug the subwoofer into an active AC outlet. The same receptacle as the rest of your audio/video system or another on the same electrical circuit should be used to avoid ground hum. Set the subwoofer's Sub Crossover Frequency control to its midpoint, and the Variable Phase control to 0°. Flip the Power Switch to the on position. Play a bass-rich program source, and slowly bring up the Bass Level control (clockwise) until the subwoofer contributes a natural level of low frequency sound at the listening position. Now please read the rest of this guide and fine-tune your installation accordingly—it will be time well spent!

## VIII. Features, Controls, AC Power

### BASS LEVEL

Adjusts the output level of the PSB subwoofer only. See "X. Setup Calibration"

The PSB subwoofer includes designed-in dynamic-range protection: it is virtually impossible to overdrive the subwoofer, regardless of volume setting or the demands of the program material. Where even higher levels of low frequencies are required, a second PSB subwoofer can provide a significant gain in total bass levels.

### TRIGGER INPUT JACK

The HD Subwoofer can be turned on (brought out of standby) by an external trigger (turn on) voltage. Connect an external trigger voltage via a cable terminated with a mono mini jack of 3mm (1/8") size. Voltages within the range of 2 to 30 volts, either AC or DC, will work. Do not exceed 30 volts (DC or RMS AC). For DC voltages the tip should be positive and the base ground. Either the trigger voltage or detected music will turn the subwoofer on. It will return to standby mode one hour after both music and the turn on voltage cease.

### CROSSOVER CONTROL

Adjusts the high-frequency roll-off of signals sent to the subwoofer. Continuously variable from 50Hz to 150Hz for precise matching of subwoofer bass reproduction with the main (left and right) stereo speakers. Not in circuit when using LFE input. See "X. Setup Calibration"

### PHASE CONTROL

Continuously varies the subwoofer output through a full 360 degrees, to give the smoothest transition between the subwoofer and main loudspeakers. Will compensate for the low to mid bass acoustic effects of different placement locations and listening rooms. See "X. Setup Calibration".

### STEREO LOW/LINE LEVEL JACKS

Connect the PSB subwoofer to a separate-component preamplifier, or to an integrated amplifier or receiver with preamplifier-out/main-in facilities, at line level. See "IX. Connecting The Subwoofer to Your Audio System".

### LFE INPUT/OUTPUT JACKS

Allows line level connection to processor or receiver containing full Bass management. Bypasses the subwoofers variable crossover. See section "X. Setup Calibration".

### HIGH/SPEAKER LEVEL TERMINALS

Connect the PSB subwoofer to receivers or integrated amplifiers equipped with speaker outputs only. See "IX. Connecting The Subwoofer to Your Audio System".

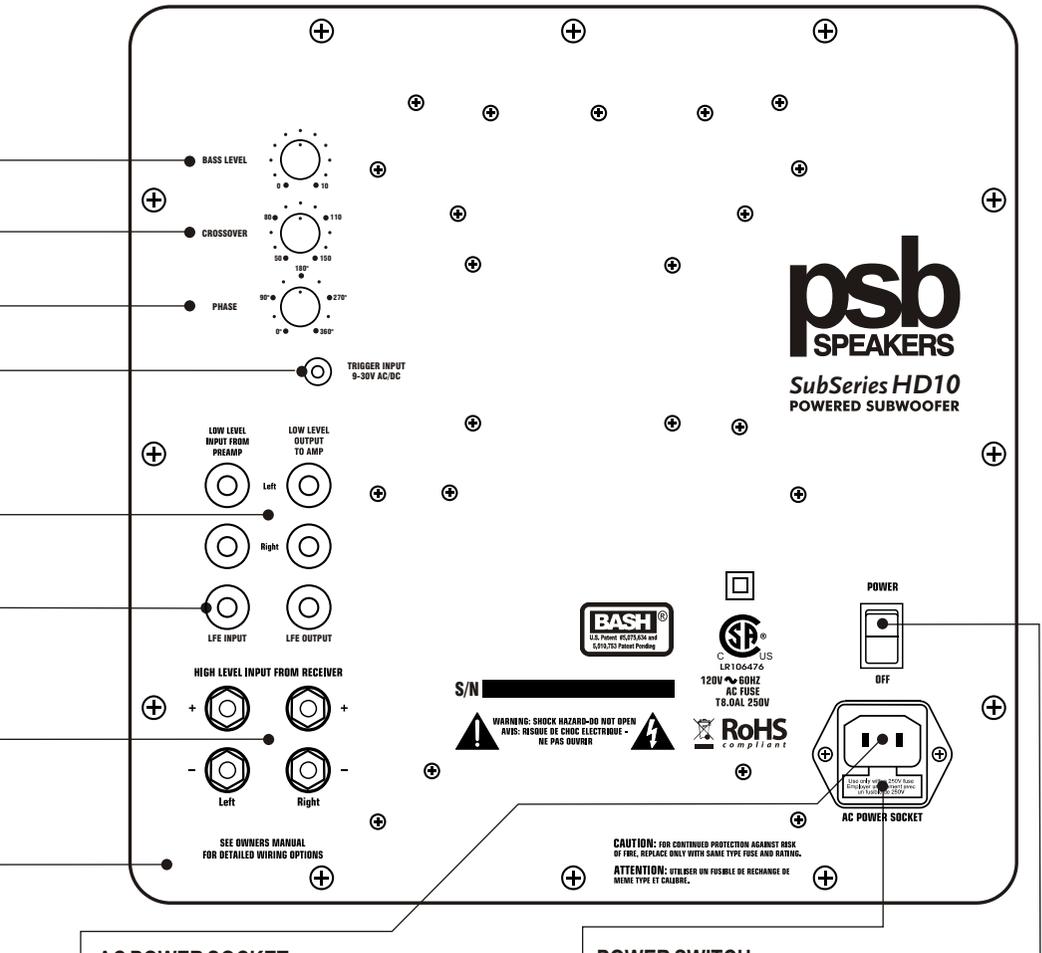
### AMPLIFIER PANEL

The metal provides cooling for the PSB subwoofer's internal amplifier by radiating heat produced in normal operation. Allow air circulation, including at least four inches clearance from wall or furnishings.

### ON/STAND-BY INDICATOR LIGHT

An On/stand-by Light Emitting Diode is located on the front of the cabinet just below the woofer. This is a two color LED with Red signifying that the unit is powered but in Stand-by mode. Upon receiving a signal the system will change from Stand-by to On and the LED color will change to Green. Note that when first powered up, the subwoofer will come into full operation with the Led glowing Green. If no signal is received for an hour the subwoofer will set itself in stand-by mode (Red) awaiting the presence of an audio signal.

**Figure 1**



**AC POWER SOCKET**

Supplies AC power to the PSB subwoofer. Connect the supplied power cord to the AC power socket. Plug the power cord into any standard wall outlet. With 230 volt versions, in some countries it may be necessary to replace the power cord to meet the standards in use locally. To avoid ground hum use the same receptacle as the rest of the system or another on the same electrical circuit.

**AC POWER CONNECTION**

The PSB subwoofer has its own self-contained amplifier and thus requires AC power (keep this in mind when selecting a location). You may plug the power cord into any standard wall outlet and leave the connection in the wall as the PSB subwoofer draws extremely little current when idle. You may want to unplug your PSB subwoofer when it will not be used for an extended period such as during a vacation.

**POWER SWITCH**

Just above the power socket is the main power switch. Turn the subwoofer on by pressing the upper end of the rocker switch (the end nearest the word "Power"). This should light the front panel LED (see above). As the subwoofer draws only an extremely small current when idle, this may be left normally on and turned off only when you do not expect to use the subwoofer for an extended period. The Power Switch must be in the On position for normal operation.

**EXTERNAL FUSE**

Should you turn on the subwoofer and there is no LED light and/or sound, please check the fuse (accessible within a small "drawer" below the power socket) to ensure it is electrically intact. Very rarely this fuse might blow from high power long term usage or possibly a turn on surge. A spare fuse is contained within the fuse holder compartment behind the inscribed text. Use a wide slot screwdriver to pry the fuse holder compartment from the AC power socket. If the fuse quickly blows a second time then there is most likely an internal fault and your subwoofer will have to be returned to PSB, or another competent service organization, for repair.

## IX. Connecting The Subwoofer To Your Audio System

There are several ways to connect a subwoofer into a system. For best results overall, we recommend using **Low Level** (line level) connections.

When making a **Low Level** (line level) connection, be sure to follow the coding on the cables to maintain left-to-left and right-to-right. Use high quality, well-shielded, low capacitance RCA cables of minimal necessary length, to avoid picking up noise in the cable runs. When making a **High Level** (speaker level) connection, in addition to maintaining left-to-left and right-to-right, be sure to use the coding of the pair of wires in each speaker cable to maintain phase—+/red/rib/writing to +/red/rib/writing and -/white/smooth/clear to -/white/smooth/clear. We recommend minimum 16 gauge wire and, for longer runs, larger (lower gauge number) wire.

### A. Connecting Home Theater Equipment (see Figure 2):

You can use a single RCA cable to connect the **Subwoofer Output** of your receiver, integrated amplifier, or preamplifier to either right or left side of the **Low Level Input** on the subwoofer.

Home Theater receivers, integrated amplifiers, surround sound processors, and preamplifiers usually have a special **Subwoofer Output** to provide the optional (Dolby Digital 5.1) Low Frequency Effects (LFE) Channel present on many movie and other programming sources. To reproduce these deep-bass effects (when they are present), supplementing the bass information in the main channels, this output must be connected to the subwoofer.

The subwoofer output/LFE signal is filtered by most receivers/processors. The subwoofer's variable low pass filter is usually redundant with filtering within an AV receiver/surround processor and should be bypassed by connecting to the LFE Input. (Connect in this manner *only* if the receiver/processor subwoofer/LFE output is low pass filtered.)

With some Home Theater electronics, on certain settings, connecting the **Subwoofer Output** does not provide the low frequencies from normal stereo music through the subwoofer. To assure that all bass is sent to the subwoofer you should use processor settings such as: "Front Speakers, Small". Consult the manuals of your other equipment to be sure.

An **LFE Output** jack is provided. It sends the LFE Input signal directly to this jack and allows multiple subwoofers to be daisy chained.

### B. Connecting Stereo Equipment Using Low Level (Line Level) (see Figure 3):

If your receiver or integrated amplifier has preamplifier outputs, or if you are using a separate preamplifier, the preferred connection is from the **Preamplifier Output** of the electronics to the **Low Level Input** of the subwoofer. If not using an AV receiver or multichannel processor with a dedicated Subwoofer output, this is the best way to connect your subwoofer. Use a dual RCA audio cable and take care to preserve proper right and left connections.

Note that signal must go from the preamplifier to both the subwoofer and the amplifier (or amplifier section of your integrated amplifier). This can be interconnected in 2 ways; a pair of stereo cables can go to the subwoofer and then return to the amplifier, or "Y" connectors can be used to simultaneously send signal from the preamplifier to both the subwoofer and the amplifier. These two connecting

schemes are different in that the Low Level Output connection at the subwoofer has bass filtered out via a 80Hz high pass filter.

Connecting the **Low Level** (line level) **Outputs from the subwoofer back to the Power Amplifier Input** is an important option. The **Low Level** (line level) of the subwoofer are internally processed through an active high pass filter (at 12dB/octave below 80Hz) to the **Low Level** (line level) **Outputs** of the subwoofer. Connecting the **Low Level** (line level) **Outputs** from the subwoofer back to the **Power Amplifier Inputs** delivers the processed signal, with reduced low frequency content, to the main speakers. With less low frequency demands, the main speakers can play louder. Particularly with smaller and/or less efficient main speakers, relieving speakers other than the subwoofer of the demands of reproducing low frequencies will allow greater sound output and dynamic capabilities from the other speakers and from the system overall.

### **C. Connecting Stereo Equipment With High Level (Speaker Level) (see Figure 4):**

You also can get excellent sonic results by connecting the **High Level** (speaker level) **Output** of your receiver, integrated amplifier or power amplifier to the **High Level Input** of the subwoofer. Use standard speaker cable and maintain polarity + , as well as right and left side.

### **D. Using Multiple Subwoofers (see Figure 5 & 6):**

Particularly in difficult rooms with difficult layouts, using two subwoofers is an alternative to smooth, as well as increase bass response. The wiring of two subs in a system is illustrated in Figure 6. Please refer to Section V, Multiple Subwoofers for further information.

## **X. Set-up Calibration**

The following procedure assumes your PSB subwoofer is installed and connected. If possible, work in a team with another person: one listening, one making subwoofer-control adjustments.

- A. Set **Bass Level** to 0, **Crossover Frequency** to 50Hz, and Phase to 0. Set any loudness, bass and treble, and/or equalizer controls on your preamplifier or integrated amplifier or receiver, or other components, to their nominal (midpoint or off) positions.
- B. Play a familiar compact disc, LP, or video soundtrack that includes substantial deep-bass content over an extended section. Your PSB dealer can help you select a few such titles.
- C. Gradually turn the **Bass Level** control clockwise until you achieve natural balance between the subwoofers deep-bass output and your main left and right loudspeakers.
- D. Slowly turn the **Sub Crossover Frequency** control clockwise to reach the best mid-bass blend with your main left and right speakers. This will be the point at which the upper bass retains solid impact and fullness. Boom or muddiness is the result if the control is too high. A thin, "reedy" quality to the mid-bass such as deep male voices (FM announcers; Darth Vader) is the result if the control is too low.
- E. While listening, slowly turn the Variable Phase control between 0° and 360° several times, leaving it in the position that yields the fullest low to mid bass

output. You will now probably want to repeat steps C & D to double-check the subwoofer blend.

Cycling through steps C & D several times with slightly different settings of both the **Bass Level** and **Sub Crossover Frequency** controls will help you get the most musical performance from your PSB Subwoofer and your system. The best combination is that which yields the most solid very-low-bass sounds, without mid-bass boom or a gap in response between the subwoofer and the main speakers.

As you will discover, the perceived effects of the **Sub Crossover Frequency** and **Bass Level** controls are interactive. Raising the latter while lowering the former can have the effect of extending deep-bass response somewhat, with a small sacrifice in overall loudness capability (this will still be well beyond the full-range loudness capability of most systems). In general, for well-recorded acoustic music the lowest **Sub Crossover Frequency** setting that yields a smooth transition between subwoofer and main speakers is often the best choice, and will promote deeper low-bass extension.

**Note:** The **Bass Level** control should not be thought of as a bass-boost or volume control. It is a set-and-forget adjustment, not intended for day-to-day adjustment. Use your preamplifier or receiver/integrated amp tone controls to make any program related balance adjustments.

## XI. In Case of Problems

### Symptom

### Action

No sound/power indicator not lit.

Ensure the main power switch is toggled to the “power” position. This switch is located at the back of the subwoofer.

Ensure the power cord is connected to the subwoofer and plugged into a live AC outlet.

Ensure the subwoofer’s volume control is NOT in the minimum counterclockwise position.

All PSB subwoofers utilize signal sensing auto on/off circuitry. If no signal is sent to the subwoofer, it will not power up and the front panel power indicator will not be illuminated. When using the subwoofer output of a receiver or processor, no signal may be immediately present in this output. The subwoofer will only power up when bass appears at the subwoofer output.

If the low level cable or speaker cable connection is poor or has been severed, the subwoofer will not power up. Swap cables to determine if this is the source of the problem.

To ensure the problem is not associated with the subwoofer, rapidly disconnect and connect the subwoofer low level or high level input. If the subwoofer power indicator then illuminates, the receiver/processor/amp may not be sending a signal to the subwoofer. When driving the low level inputs from a subwoofer output, ensure the receiver/processor is correctly configured to provide signal at the subwoofer output.

Check the main fuse located in the power cord socket and replace as required. If the new fuse also blows, the subwoofer amplifier requires service.

Sounds distorted

Lower volume if the subwoofer begins to sound distorted to determine if playback at a lower level solves the problem. If a slight reduction in level solves the problem, were you being realistic in your subwoofer level setting? If the distorted sound remains at a low level, one or both of the woofers may be damaged.

Hum

Hum that appears when using the subwoofer’s low level input(s) is usually caused by using an inferior, damaged, exceptionally long low level cable or cables routed near high current wiring/appliances. Replace/shorten the low level cable connecting the subwoofer to the source equipment (receiver or processor). Low level cable runs of longer than 20 feet may require the use of a line driver (not available from PSB).

Hum heard when using the subwoofer’s high level input(s) is usually caused by an intermittent or missing positive or negative connection. Ensure there is a good connection between all speaker wires connecting the subwoofer and receiver/amplifier. If the subwoofer high level connection is routed through a switch box, ensure the box shorts the positive and negative connections together when the subwoofer should be inactive. Hum will result if the switch box floats the positive or negative connection.

Decreasing the volume control of the subwoofer and increasing the volume control of the receiver/processor/amplifier subwoofer output can sometimes reduce hum to an acceptable level.

See your dealer if you require service. PSB dealers are equipped to handle almost all problems. If you have moved since your purchase, the nearest authorized PSB dealer should be able to help you. You may locate your nearest PSB authorized dealer on-line at [www.pbspeakers.com](http://www.pbspeakers.com). If the problem is not resolved, please contact us, providing the Model name, Serial Number, date of purchase, dealer name, and a full description of the problem.

We appreciate your purchase, and hope this owner’s guide helps you enjoy the exceptional satisfaction that PSB speaker systems have to offer. We wish you many years of enjoyable listening!

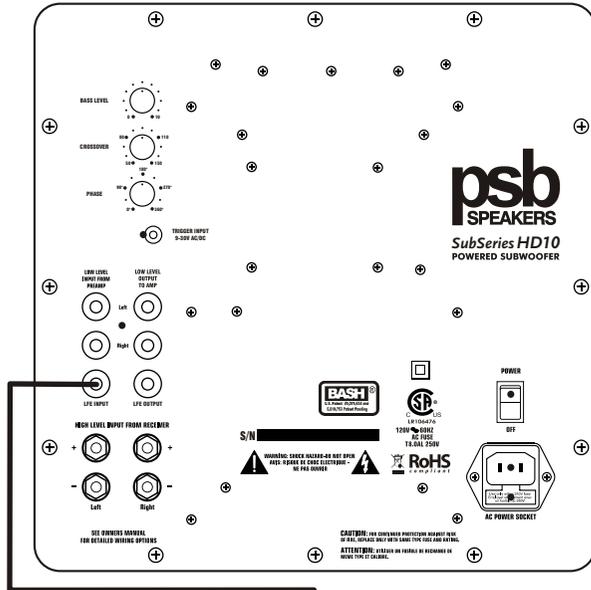
# SubSeries HD

## With SUBWOOFER/LFE INPUT

INTÉGRATION avec RÉCEPTEUR A/V / ENTRÉE LFE

INTEGRACIÓN con RECEPTOR de AUDIO-VIDEO/ENTRADA LFE

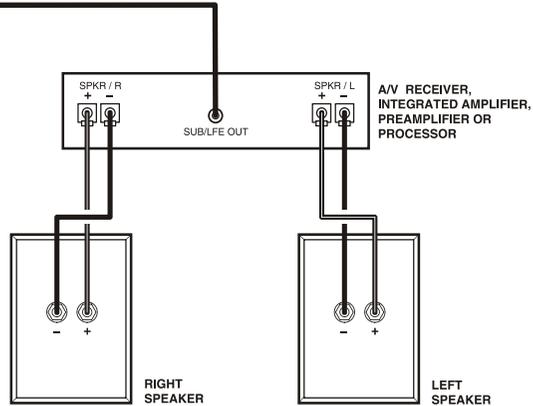
Figure 2



Hook up same for all models—HD10 Back Plate used for illustration.

Le raccordement est le même pour tous les modèles—Plaque arrière HD10 est utilisée pour fins d'illustration.

La conexión es la misma para todos los modelos—Se usa el panel posterior del HD10 como ilustración.



Use this configuration to connect the subwoofer to an A/V receiver or processor's subwoofer/LFE output.

Utilisez cette configuration pour raccorder le haut-parleur de sous-grave à un récepteur A/V ou à la sortie sub/LFE du processeur. L'interrupteur de l'entrée/dérivation du filtre séparateur de fréquences LFE doit être réglé à « active » seulement si votre sortie de récepteur/processeur/caisson de grave LFE est filtrée bas-niveau.

Use esta configuración para conectar el subgrave a un receptor de audio/video o a la salida sub/LFE de un procesador. El interruptor que permite pasar por alto le entrada LFE/red divisora debe ponerse en la posición activa solamente si hay un filtro de pase bajo en la salida para altavoz subgrave del receptor de audio-video/procesador.

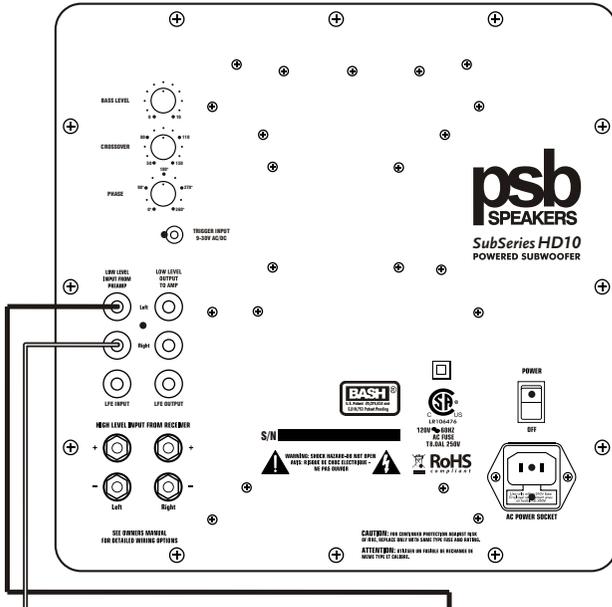
# SubSeries HD

## With LOW LEVEL INPUT and OUTPUT OPTION

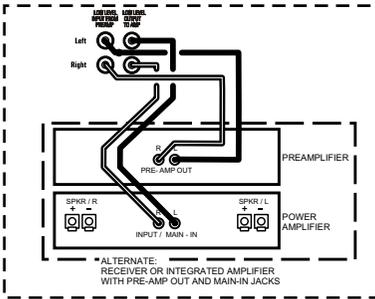
Avec L'OPTION D'ENTRÉE BAS-NIVEAU et de SORTIE BAS-NIVEAU

Con OPCIÓN de ENTRADA y SALIDA a NIVEL BAJO

Figure 3



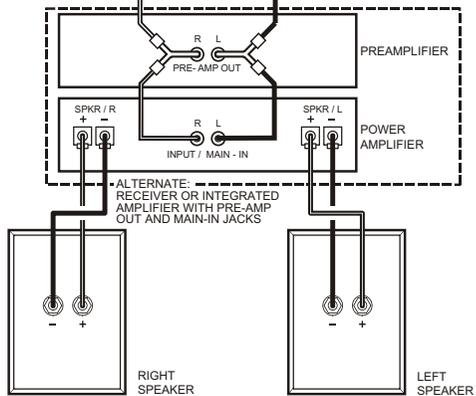
### OPTION



This method of wiring does limit low frequencies reaching left and right main speakers.

Ce câblage limite les basses fréquences atteignant les haut-parleurs principaux gauche et droite.

Esta conexión limita las frecuencias bajas que llegan a los altavoces principales derecho e izquierdo.



Hook up same for all models—HD10 Plate used for illustration.

Le raccordement est le même pour tous les modèles—Plaque arrière HD10 est utilisée pour fins d'illustration.

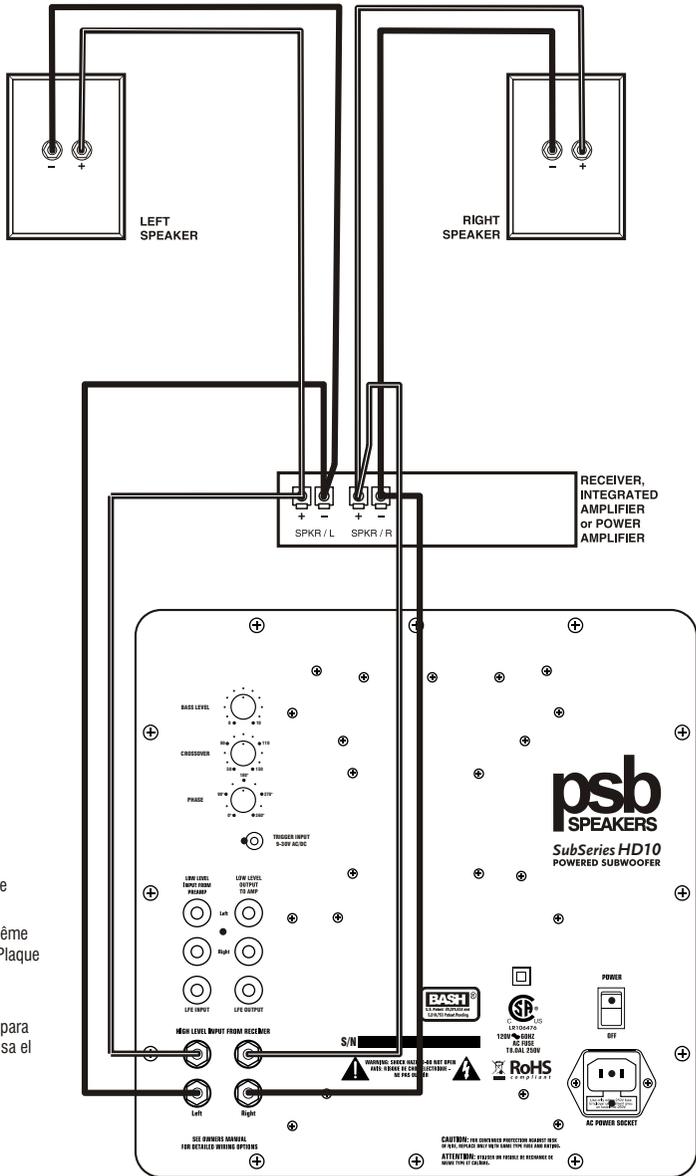
La conexión es la misma para todos los modelos—Se usa el panel posterior del HD10 como ilustración.

**Low level connections wire the subwoofer to a preamplifier or to the "pre-out" jacks of an integrated amplifier or receiver, using standard RCA cables.**

**Les raccordements bas-niveau relient le haut-parleur de sous-grave à un préamplificateur ou aux bornes «sortie préamplificateur» d'un préamplificateur, d'un amplificateur intégré ou d'un récepteur au moyen de câbles RCA standard.**

**Para conexión al nivel bajo se conecta el subgrave al pre-amplificador o a los conectores "pre salida" de un amplificador integrado o receptor usando cables comunes tipo RCA.**

SubSeries HD  
 With HIGH LEVEL INPUT  
 Avec ENTRÉE HAUT-NIVEAU  
 Con ESTRADA de NIVELALTO  
**Figure 4**



Hook up same for all models—HD10 Back Plate used for illustration.  
 Le raccordement est le même pour tous les modèles—Plaque arrière HD10 est utilisée pour fins d'illustration.  
 La conexión es la misma para todos los modelos—Se usa el panel posterior del HD10 como ilustración.

High level connections wire the subwoofer to the speaker output terminals of a receiver or amplifier, just as if the subwoofer was a pair of speakers.

Les connexions haut-niveau relient le haut-parleur de sous-grave aux bornes de sorties h.-p. d'un récepteur ou d'un amplificateur, comme s'il s'agissait d'une paire d'enceintes acoustiques.

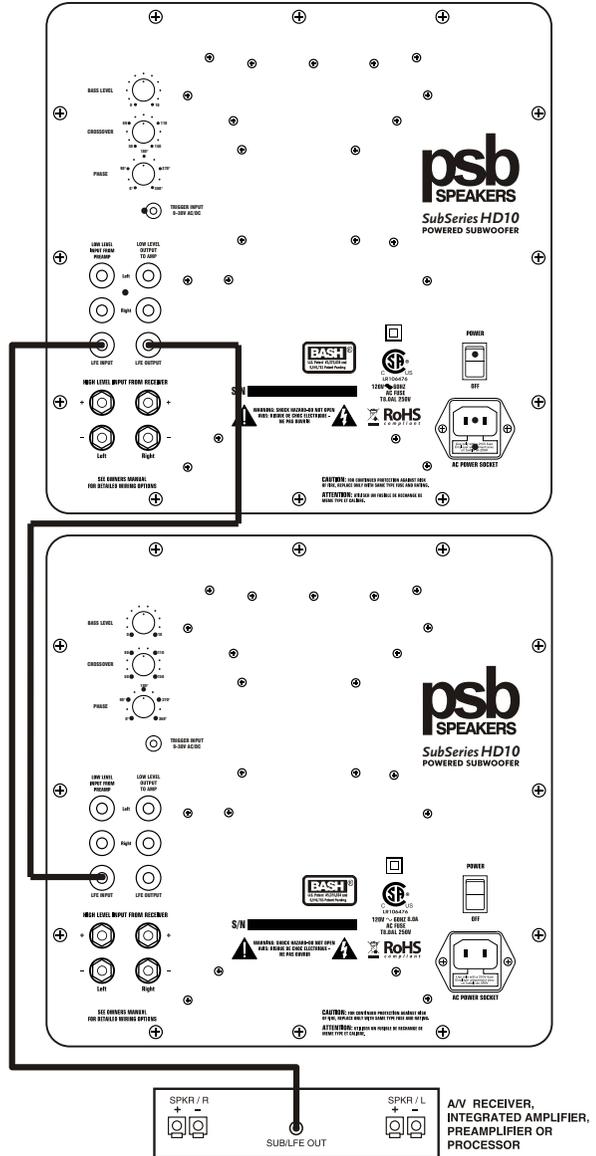
Para conexión al nivel alto se conecta el subgrave a las terminales de salida para altavoz de un receptor o amplificador como si se tratase de un par de altavoces.

**SubSeries HD**  
**With LOW LEVEL INPUT to TWO SUBWOOFERS**  
 Avec ENTRÉE BAS-NIVEAU vers DEUX H.-P DE SOUS-GRAVE  
 Con ENTRADA de NIVEL BAJO a DOS SUBGRAVES

**Figure 5**  
 Hook up same for all models—HD10 Back Plate used for illustration.

Le raccordement est le même pour tous les modèles—Plaque arrière HD10 est utilisée pour fins d'illustration.

La conexión es la misma para todos los modelos—Se usa el panel posterior del HD10 como ilustración.



*The LFE input/crossover bypass switch should be set to active only if your A/V receiver/processor subwoofer/LFE output is low pass filtered.*

For this type of connection use standard RCA cables and only if your A/V receiver or processor's subwoofer/LFE output is low pass filtered.

Pour ce genre de connexion, il faut brancher deux adaptateurs en «Y» RCA sur les prises de sortie d'un préamplificateur, d'un amplificateur intégré ou d'un récepteur.

Para esta conexión se necesita enchufar dos adaptadores RCA tipo "Y" a los conectores de salida de un preamplificador, amplificador integrado o receptor.

# SubSeries HD

## With LOW LEVEL INPUT to TWO SUBWOOFERS

### Avec ENTRÉE BAS-NIVEAU vers DEUX H.-P DE SOUS-GRAVE

### Con ENTRADA de NIVEL BAJO a DOS SUBGRAVES

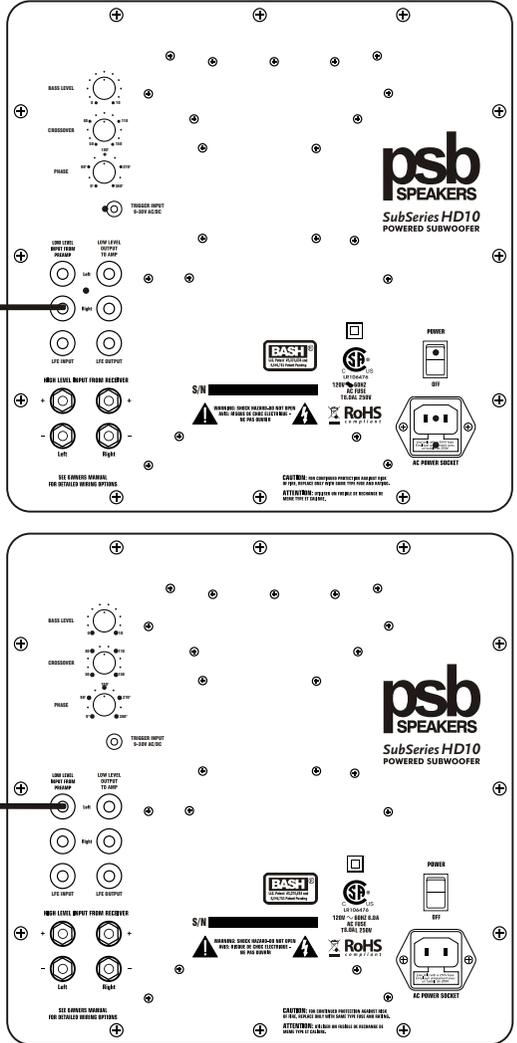
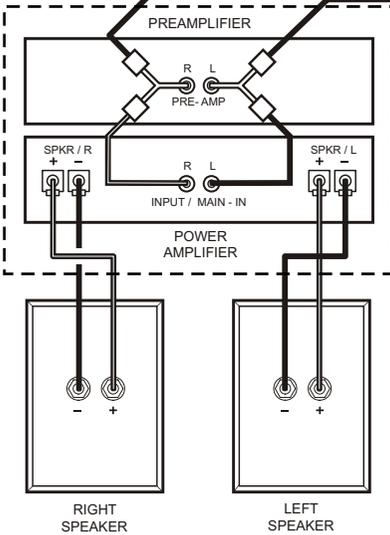
#### Figure 6

Hook up same for all models—HD10 Back Plate used for illustration.

Le raccordement est le même pour tous les modèles—Plaque arrière HD10 est utilisée pour fins d'illustration.

La conexión es la misma para todos los modelos—Se usa el panel posterior del HD10 como ilustración.

#### ALTERNATE RECEIVER



For this type of connection two RCA "Y" adapters are required to be plugged into the pre-out jacks of a preamplifier or integrated amplifier or receiver.

Pour ce genre de connexion, il faut brancher deux adaptateurs en <<Y>> RCA sur les prises de sortie d'un préamplificateur, d'un amplificateur intégré ou d'un récepteur.

Para esta conexión se necesita enchufar dos adaptadores RCA tipo "Y" a los conectores de salida de un preamplificador, amplificador integrado o receptor.

## XII. Specifications

	<b>HD8</b>	<b>HD10</b>
<b>FREQUENCY RANGE</b> Response $\pm$ 3dB LF Cutoff 10dB	(Anechoic Chamber) 35-150Hz 33Hz	(Anechoic Chamber) 30-150Hz 28Hz
<b>AMPLIFIER POWER - INTERNAL</b> Continuous Dynamic Dynamic Peak Type	500W 800W 1600W Class H	750W 1000W 2000W Class H
<b>ACOUSTIC DESIGN</b> Woofer (Nominal)	8" (203mm) Poly-coated Fiber Cone High Density Rubber Surround 2 3/4" (70mm) Voice Coil 80oz (2268g) Magnet	10" (254mm) Poly-coated Fiber Cone High Density Rubber Surround 2 3/4" (70mm) Voice Coil 100oz (2835g) Magnet
Passive Radiator	2 x 8" (203mm)	2 x 10" (250mm)
Crossover	Variable 50Hz-150Hz Low Pass Filter 24dB/octave Linkwitz-Riley	Variable 50Hz-150Hz Low Pass Filter 24dB/octave Linkwitz-Riley
Internal Volume	0.42 ft <sup>3</sup> (11.9 liter)	0.67 ft <sup>3</sup> (19.0 liter)
Design Type	Passive Radiator	Passive Radiator
<b>SIZE</b>	W x H x D 10 1/2" x 10 1/2" x 10 1/2" 267mm x 267mm x 267mm Plus 1 1/8" (28mm) for feet	W x H x D 12" x 12" x 12" 305mm x 305mm x 305mm Plus 1 1/8" (28mm) for feet
<b>WEIGHT</b> Net Shipping	25 lb (11.4 kg)/each 30 lb (13.6 kg)/each	38 lb (17.3 kg)/each 45 lb (20.5 kg)/each
<b>FINISH</b>	Matte Black Paint	Matte Black Paint
<b>FEATURES</b>	Volume, Crossover, Phase, On-Standby/Off Low/Line Level/LFE Gold-plated RCA Inputs/Outputs High/Speaker Level 5-way Binding Post Inputs 12V Trigger Removable 8 foot IEC Line Cord	Volume, Crossover, Phase, On-Standby/Off Low/Line Level/LFE Gold-plated RCA Inputs/Outputs High/Speaker Level 5-way Binding Post Inputs 12V Trigger Removable 8 foot IEC Line Cord
<b>POWER</b> Input Fuse	 OR  120V, 60HZ T 6.3AL, 250V	 OR  120V, 60HZ T 8.0AL, 250V

All specifications are subject to change without notice. PSB, PSB Speakers and SubSeries are trademarks of, or used under license by, PSB Speakers, a division of Lenbrook Industries Limited.

© 2007 PSB All other trademarks used herein are trademarks of their respective owners. All rights reserved.

PSB Speakers  
633 Granite Court  
Pickering, Ontario L1W 3K1  
CANADA  
[www.psbSpeakers.com](http://www.psbSpeakers.com)  
888-772-0000 (North America)  
905-831-6555 (International)  
Fax: 905-837-6357

