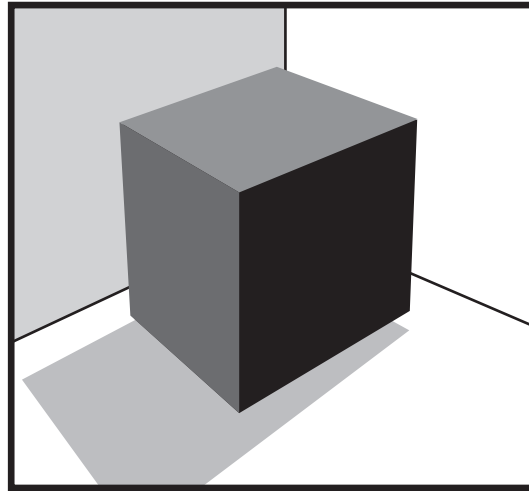




***ULS-15* Subwoofer Manual**



Features

Wireless Technology.

Contrary to popular belief, subwoofer placement is critical in order to achieve optimal sound quality. Incorporating wireless technology in our subwoofer greatly enhances your ability to position the subwoofer for optimal performance while still keeping the spouse happy.

Ultra Linear Woofer.

This woofer uses a patented XBL2™ motor design that has an incredibly linear motor force. The motor force (BL) stays within 2% over a wide +/- 20 mm excursion. Most woofers with Xmax of +/- 20 mm would be lucky to have the BL within 2% over a +/- 5 mm range!

Powerful BASH® Amplifier.

A very high headroom BASH® amplifier is used to fully utilize the ultra low distortion, ultra high output capability of the woofer. This amplifier is capable of delivering up to 1000 W rms short- term power.

Great Connectivity.

Now included are more connectivity options than any other subwoofer we know of, at any price! Inputs include balanced XLR, unbalanced RCA, wireless, and speaker level. This flexibility allows you to use the subwoofer in recording studios, high end two channel systems, and state-of-the-art home theater systems.

Compact Enclosure.

Traditionally it has been difficult to get loud, clean, ultra deep bass from a compact enclosure. The ULS-15 changes that. It gives you loud, clean, ultra deep bass from a compact, beautifully-finished enclosure.

Accommodates All Room Sizes.

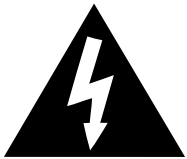
An Ultra Low Frequency (ULF™) trim control allows you to maintain accurate deep bass response in virtually any room, no matter what shape or size.

NO USER SERVICEABLE PARTS ARE INSIDE.



WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE



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.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'électrocution.



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.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

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. Unplug this apparatus during lightning storms or when unused for long periods of time.

12. 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.

13. **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.

14. To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.

15. The mains plug of the power supply cord shall remain readily operable.

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 are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

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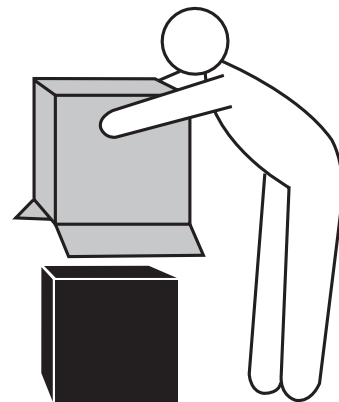
Set-Up

Step 1: Unpacking

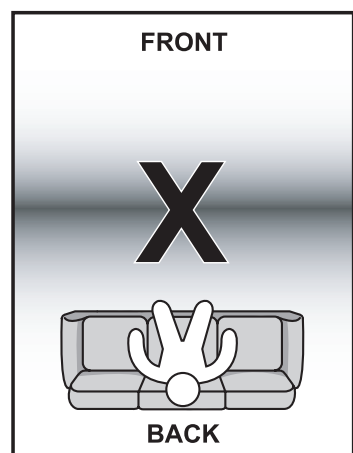
Before unpacking, inspect the carton for puncture holes, crushed corners, etc. Take photos of any potential shipping damage before proceeding to unpack. Take note of which corner or wall the damage is on so you can check the corner/side of the subwoofer nearest the external damage.

This subwoofer is very heavy. Be sure to get someone to help you unpack. If you have a hard floor, unpack the subwoofer on a throw rug or blanket to avoid unwanted scuffing or scratching. Find the top of the box and open it. Holding the flaps open, roll the box over until it is upside-down. Lift the box off.

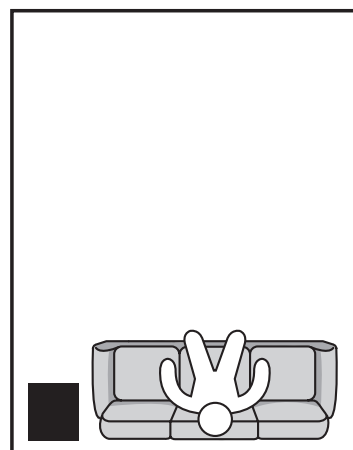
Lift the subwoofer off the foam corners and place it on the carpet/blanket. Remove the protective bag and inspect for damage. If all looks fine, turn the subwoofer so the bottom faces up (the face with the four screw holes). Screw in the feet. If the subwoofer has a protective stick-on plastic, leave it on until you decided to keep the subwoofer for good. Any returned product with scratches, etc. will be subject to a restocking fee.



Upright the subwoofer and move it to the desired location.



Avoid placing the subwoofer halfway between the front and back walls. Avoid sitting there as well.



Corner and nearfield placement usually sound best.

Step 2: Placement

Contrary to popular belief, placement is extremely important. It can dramatically affect the bass quality and quantity. An optimally placed subwoofer is much more powerful and better sounding than a poorly placed one.

Important Guidelines

- This subwoofer does *not* have magnetic shielding and has a HUGE magnet (35 lbs!). Keep the subwoofer at least 5 ft away from CRT TVs or video displays. LCD, plasma, and DLP TVs are not affected, and the subwoofer can be placed next to these items with no magnetic interference. Keep the subwoofer at least 2 ft away from computers in order to prevent the hard drive from being erased.

Rules of thumb for placement

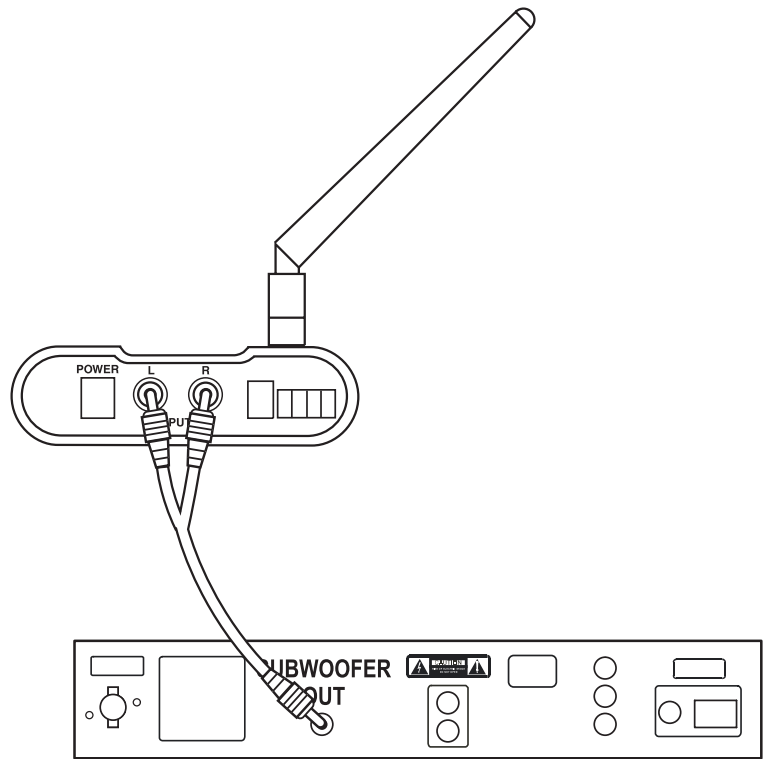
- **Avoid the center of the room:** In general, avoid placing the subwoofer half way between the front and back walls. You should avoid sitting in the middle as well.
- **Use near-field placement:** You get the tightest upper bass and the most punch if you can place the subwoofer close to you. By being close to the subwoofer, you get high SPL without requiring a lot of power. This helps to minimize annoyance to your neighbors as well. The direct- to- reflected ratio is also higher, helping to reduce room effects. One situation where near-field placement may not work best is when your room is very shallow. In a shallow room (less than 15 ft front to back), placing the sub close to you will lead to a dip in the low bass response.
- **Corner placement:** If near-field placement is not optimal, then corner placement is a great alternative. A front corner furthest from openings is generally optimal for deep bass reproduction.
- **Placement in entertainment centers:** This is acceptable as long as you can fire the woofer straight into the room, and you have at least 1" spacing on the sides, top and back (measured from the heat sink). The air in the cavity must be able to circulate with the outside air to get proper cooling. Make sure the entertainment center will not vibrate and rattle. Use the rubber feet if placing the subwoofer in an entertainment center.
- **Direct line of sight between subwoofer and wireless transmitter:** If you are using the wireless connection, the signal is most reliable if there is nothing blocking the subwoofer from the wireless transmitter. Also, the transmitter should not be too close to the ground, preferably 18" or higher. Do not worry too much if these criteria cannot be met. We have tested this subwoofer with the transmitter on the ground, and in a room with four walls between the transmitter and the subwoofer, and the wireless technology still works fine.

Step 3: Hookup

We will refer to receivers, integrated amplifiers, and pre-amps as *controllers*. Take a look at the back of your controller. The output connectors available determine the best method of hooking up your subwoofer.

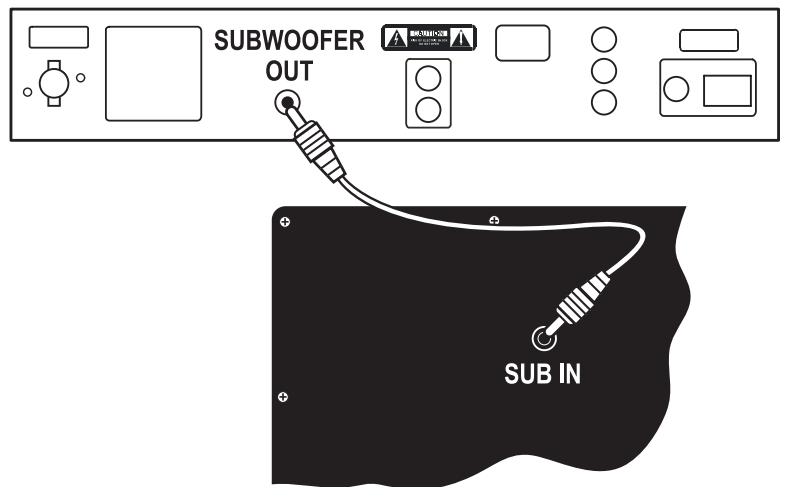
Method A. Connecting to controllers with a SUBWOOFER or LFE output

If you have this, you should use it. All Dolby Digital, DTS, THX, and Dolby True HD equipped controllers have a low level Subwoofer pre-out (not to be confused with a subwoofer input – many customers have hooked up their subwoofer to the subwoofer input on their controller only to get no sound!). This offers the easiest and best connection.



Wireless Connection

Connect the subwoofer pre-out to both inputs on the wireless transmitter using a splitter. Set the wireless channel on the transmitter so that it is the same as that on the subwoofer. Set the wired/wireless switch on the subwoofer to 'Wireless'. Place the transmitter as high as practical, and away from metal surfaces if possible.



Wireless



Wired

Wired Connection

Connect the subwoofer pre-out to either one of the two RCA low level inputs on the subwoofer. If your controller has a balanced output, connect to either one of the two XLR balanced inputs.

Enable your subwoofer out on your controller. We highly recommend setting all your speakers to SMALL so all bass will be routed to the subwoofer, freeing the main amp and main speakers from the rigorous demands of reproducing bass.

Method B. Connecting to controllers with HIGH LEVEL speaker outputs.

Use this method only if you do not have any other choice. Integrated amplifiers or stereo receivers with no pre-outs fall in this category. The subwoofer will operate in bass augmentation mode. i.e., the main speakers will be running full-range. You dial in the subwoofer to come in just where the main speakers start to fade out. Since the subwoofer uses its own amplifier, and has a high input impedance, it will not alter the loading on your main amplifier.

It is important to know if your controller has true ground or not. Bridged amplifiers, and amplifiers like Carver (which inverts phase to one channel making their black terminal on one channel the signal instead of ground) should not be used. Similarly, digital amplifiers that have unfiltered outputs are also not suitable.

Since the subwoofer will not be drawing any significant current, any gauge wire will do. No need for heavy gauge wires.

ULS-15 Amplifier Panel

Antenna:

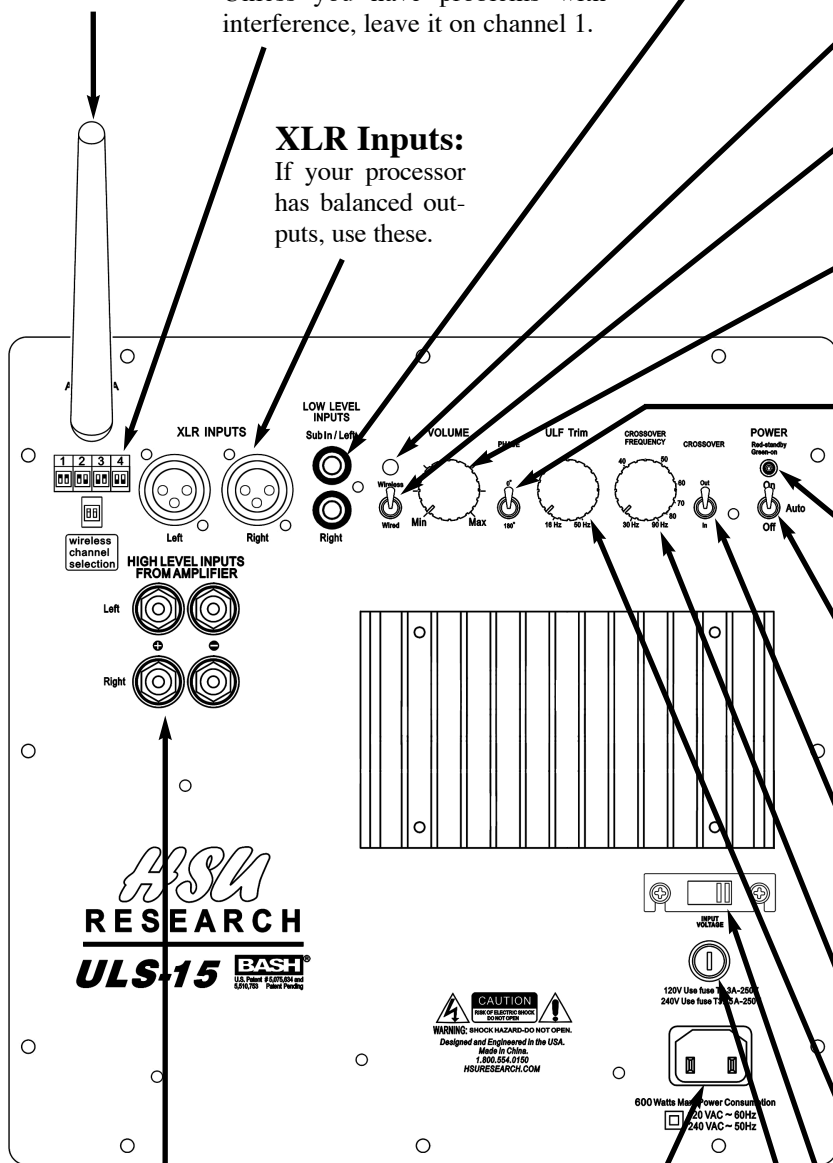
Orient for optimal reception. Usually vertical position is good.

Wireless Channel Selection:

By default, it is set to channel 1. Unless you have problems with interference, leave it on channel 1.

XLR Inputs:

If your processor has balanced outputs, use these.



High Level from Amplifier:

If your controller does not have low level outputs (SUBWOOFER, LFE, or full-range preamp outputs), use these color coded connectors. Run speaker wire from your amplifier or receiver's speaker terminals to tap the signal.

Power Input:

This is an IEC socket. Connect the supplied power cord here. If your country uses a different power cord, get one locally.

Low Level/Sub Inputs:

For Dolby Digital systems, connect the SUBWOOFER OUT to either of these inputs. For stereo-only systems, you may connect the left and right channels to both inputs as explained in the manual.

Wireless Signal Indicator:

LED is on (green) when the wireless receiver and transmitter establishes connection.

Wired/Wireless Switch:

Select "Wireless" if you use the wireless feature. Otherwise, select "Wired."

Volume Control:

Set this to the second line up from minimum. Use the subwoofer level control on your controller to fine tune. If your controller does not have a subwoofer level control, then adjust this to get the desired bass level.

Phase Switch:

Depending on your system and room, the bass in the crossover region may be smoother if you reverse the phase of the subwoofer. See the Fine Tuning section of the manual.

Power Indicator:

When the subwoofer is ON, this LED light will be green. When the subwoofer is in STANDBY mode, it will be red.

Power / Auto-on Switch:

When in the ON position, the subwoofer will stay on at all times. In AUTO mode, material with bass will quickly turn the subwoofer on. After around 15 - 30 minutes of inactivity, the subwoofer will automatically go into STANDBY mode.

Crossover Defeat Switch:

If you are using a SUBWOOFER or LFE output, you can disengage the crossover by switching it to OUT. The crossover should be switched to IN when using high level inputs or two channel low level inputs.

Crossover Frequency Control:

This low-pass crossover controls what frequencies are handled by the subwoofer.

ULF Trim:

This compensates for room gain at very low frequencies. Smaller rooms have more boost in the low bass. Setting this control to 16 Hz gives flat response to 16 Hz outdoors. Adjust to suit your room.

Voltage Selector Switch:

For 100 - 120V line voltage, set to 120V. For 220 - 250V, set to 240V.

Removable Fuse Holder:

By pushing in and turning counter-clockwise, you can remove and replace the fuse. Use only the correctly rated 5 x 20 mm replacement fuses.

Method C. Connecting to controllers with PRE-OUTs.

This method is for stereo systems with low level pre-outs.

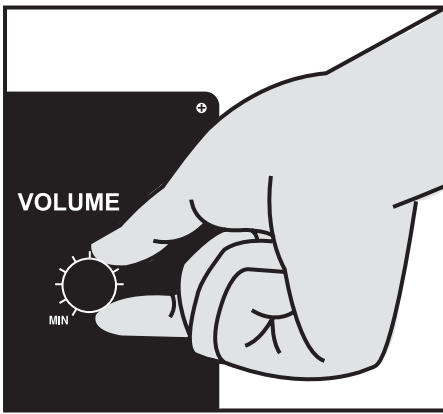
Wireless Connection

Connect the low level pre-outs to the two inputs on the wireless transmitter. Set the wireless channel on the transmitter so that it is the same as that on the subwoofer. Set the wired/wireless switch on the subwoofer to 'Wireless'. Place the transmitter as high as practical, and away from metal surfaces if possible.

Wired Connection

Connect the low level pre-outs to the two RCA low level inputs on the subwoofer. If your controller has balanced outputs, connect to the two XLR balanced inputs on the subwoofer.

This approach will also be in augmentation mode unless you purchase our high pass filter to keep bass from your main speakers (unbalanced systems only). Refer to the high pass filter instructions on how to do that.



Step 4: Volume Level

To start, set the volume level on the subwoofer at around 11 o'clock. Setting the volume level much higher than that will make the auto-on function not work properly. Auto-on level sensing is before the volume control. Hence setting the volume level too high on the subwoofer will lead to very low input levels for the auto-on circuit, and will make it harder for the sub to turn on.

To set the subwoofer level subjectively, set the subwoofer to the highest level where it sounds nice and bass and kick drums still sound tight and non-boomy. For home theater applications, most people like the bass to be a bit higher than for music. 3 dB higher is a good choice, if your receiver allows you to set levels for each source.

Step 5: Crossover

If your controller has bass management and has a steep crossover slope, set the crossover switch on the subwoofer to 'Out'. If your controller has a gentle crossover slope (12 dB/Oct or less), set the crossover switch on the subwoofer to 'In', and set the crossover frequency knob on the subwoofer to the same frequency that was selected on your controller.

For bass augmentation mode (method B or C), set the crossover switch on the subwoofer to 'In' and crossover frequency knob set to where your main speakers start to fade out. Adjust the level for best blend.

Step 6: Fine Tuning

ULF Trim

When the room is small, you get room gain effect that boosts deep bass. In a small space like a car, bass below 80 Hz would start to rise. We have added a ULF Trim control on the subwoofer in order to compensate for this room gain effect. For very large rooms or very open floor plans, set the trim control to 16 Hz. For very small rooms that are enclosed, set the trim control to 50 Hz, or somewhere in-between for moderately sized rooms.

Setting the Phase

Depending on the absolute phase of your main speakers and amplifier, and the distances of the subwoofer and main speakers from the listening position, the bass in the crossover region may be smoother if you reverse the phase of the subwoofer. The phase switch position that give a fuller bass in the crossover range is the correct one.

If your controller allows you to set the distance of the subwoofer and main speakers, set these correctly first. This will also time align the subwoofer to give you the most seamless and tight bass.

Using the CDR to Fine Tune

You can use the test tones on the CDR we provide to fine tune the subwoofer. 80 Hz is the crossover frequency used for this example:

1. Play the 50 Hz test tone.
2. Adjust the volume on the controller to get 80 dB reading on the SPL meter placed at the listening chair.
3. Play tones from 32 Hz up to 200 Hz. Note the SPL reading on the meter at each frequency.
4. Take the average of the four tones below 80 Hz: – 63, 50, 40 and 32 Hz.
5. Take the average of the four tones above 80 Hz: – 100, 125, 160 and 200 Hz.
6. If the average of the four tones below 80 Hz is, say, 5 dB higher than the average of the upper range, adjust the subwoofer level down 5 dB.
7. If your controller has a subwoofer out level, use this to adjust the level. If it does not, play the 50 Hz tone and adjust the subwoofer volume control to get the desired change in level.

If you are using the Radio Shack SPL meter, compensate for the meter's deep bass deficiency. The older analog Radio Shack meters are down 12 dB at 16 Hz, 7 dB at 20 Hz, 4 dB at 25 Hz, and about 2 dB down at 32 Hz. Add these numbers to the actual readings you get from the meter. The newer digital meters are off even more. Add at least 2 dB to the above numbers.

Equalizing the Subwoofer

Some controllers have built-in equalizers for the subwoofer channel. You can use these to reduce the major room modes (peaks). It is generally not recommended to boost bass to compensate for nulls (dips) as this will use up too much power and risk damaging the subwoofer.

Troubleshooting

If you think your subwoofer has a problem, please do everything you can to confirm the problem before contacting us for service, including reading through the troubleshooting section. Many times the problem actually is caused by other items in the system or the subwoofer's interaction with those items. Much of the time, the service department will not be able to reproduce the error.

Problem	Cause	Solution
Humming or buzzing noise	You have an amplifier problem.	<ul style="list-style-type: none"> • Disconnect all interconnects from the amplifier. If still hums, call/email technical support.
	Your speaker wires or interconnects are the cause.	<ul style="list-style-type: none"> • It is possible that some cables have a poor or broken ground due to poor construction, oxidation, or damage. Also, poorly shielded cables can potentially pick up noise. Try another interconnect or speaker wire. Also, move the signal cable away from AC cables, power transformers, or other EMI sources.
	A light dimmer or other triac based (SRC) device is on the same AC circuit.	<ul style="list-style-type: none"> • Use an AC line filter or plug the unit into a different circuit.
	You have a problem with other equipment.	<ul style="list-style-type: none"> • If hum goes away when interconnects are disconnected, the hum is coming from the rest of your equipment. Add them back one piece at a time. The one that causes the system to hum is the source of the hum.
Subwoofer goes into STANDBY mode while material is playing.	The source is not providing enough signal.	<ul style="list-style-type: none"> • The unit is going into STANDBY mode during the quiet passages. Try turning the source signal up. On a Dolby Digital receiver, turn the SUBWOOFER level up in the SPEAKER SET-UP menu. After you turn the signal up, turn down the volume knob on the subwoofer to compensate. • An alternative is to turn the subwoofer ON/AUTO/OFF switch to the ON position. It does not use any more power and does not affect reliability.
No output from the subwoofer (the LED does <u>not</u> light up).	AC power is not getting to the amplifier.	<ul style="list-style-type: none"> • Check that the power cord is plugged in securely at both ends and make sure that the power outlet the subwoofer is plugged into is working.
	The amplifier's fuse is blown.	<ul style="list-style-type: none"> • Check the fuse. The fuse is located on the amplifier, near the power plug. Unplug the power cord and remove the fuse holder with a flat head screwdriver. If the fuse is blown, the output transistors are probably damaged. Call/e-mail technical support for authorization to send the amplifier back for service.
	The amplifier has gone into self-protect mode.	<ul style="list-style-type: none"> • Unplug the power cord. Wait 2-3 minutes. Plug the power cord back in. It should power up and work normally.

Problem	Cause	Solution
No output from the subwoofer (LED lights up red).	The subwoofer is not receiving a signal.	<ul style="list-style-type: none"> Recheck the connections between the source and the subwoofer. If you are using a receiver with Dolby Digital, make sure you are connecting to the subwoofer pre-out and not the subwoofer input on the receiver. If you are using the wireless connection, make sure the transmitter is powered (i.e.d. lights up), and the 'Wireless/Wired' switch is set to 'Wireless'. Make sure the channel selection are the same on the transmitter and receiver. Check and see if the led above the 'Wireless/Wired' switch is lit up solid green. If not, move the antenna, transmitter, and subwoofer to get better reception. If you are using the wired connection, make sure the 'Wired/Wireless' switch is set to 'Wired'.
	Subwoofer amplifier is faulty.	<ul style="list-style-type: none"> With the volume on the subwoofer turned to a low setting, try plugging the subwoofer directly into a DVD player's analog output, ipod, or other MP3 player or lightly touching the unplugged end of the input cable. If you hear noise from the subwoofer, the problem is with your connection to the system. If you hear no noise, try turning the volume on the subwoofer up some more. If you still hear no noise, call/e-mail technical support for authorization to send the amplifier back for service.
No output from the subwoofer (LED turns green).	Connection between subwoofer amplifier and woofer is faulty.	<ul style="list-style-type: none"> Email techsupport@hsuresearch.com or call (800)554-0150
	Driver or amplifier is faulty.	<ul style="list-style-type: none"> Email techsupport@hsuresearch.com or call (800)554-0150
Little or no sound from one main speaker.	You used speaker level connections and have mixed up the polarity of the wires, thus shorting one channel of the main amplifier.	<ul style="list-style-type: none"> Correct the polarity of the speaker wires by matching the +/- from the receiver/amplifier to the +/- of the subwoofer's speaker level input.
	You used speaker level connections and one or both your main amplifier's ' - ' are not true ground.	<ul style="list-style-type: none"> Connect only to the channel that has a true ground ' - '. If neither channel has a true ground ' - ', e-mail/call technical support.
Bass output from subwoofer is low.	Level on subwoofer or receiver's subwoofer output is too low.	<ul style="list-style-type: none"> Increase the volume of the subwoofer and the subwoofer level or LFE level on the receiver or other source. It is best to set the level of the subwoofer relative to the other speakers using a test disk and a Radio Shack SPL meter, or built-in tones on your pre-amp/processor. See "Volume Level" in Step 4.
Subwoofer thumps when the system is being turned on and off.	Noise is being generated by up-stream equipment.	<ul style="list-style-type: none"> When you shut down your equipment, turn off the subwoofer first. When powering up, turn on the subwoofer last.

Repair

If your unit needs service, please re-review the troubleshooting section first.

Contact tech support via e-mail (24/7) or call 1-800-554-0150 9am to 5pm Pacific time, Monday through Friday.

We will try and respond to emails sent to techsupport@hsuresearch.com within two business days.

Specifications

	<i>ULS-15</i>
<i>Frequency Response</i>	+/-1 dB 15 – 200 Hz
<i>Woofers Size</i>	15 inches
<i>Amplifier Power</i>	1000 W rms short-term
<i>Crossover Frequency Range</i>	30-90 Hz, bypassable
<i>Crossover Slope</i>	24 dB/Oct
<i>Crossover Type</i>	Linkwitz-Riley, Low Pass only
<i>Phase</i>	0°/180°
<i>ULF Trim</i>	16 - 50 Hz
<i>Inputs</i>	Balanced L/R, unbalanced L/R, speaker level L/R, Wireless 2.4 GHz L/R
<i>Dimensions</i>	18" cube (enclosure only), 19" (h) x 18" (w) x 19.5" (d) with feet, grille and heatsink
<i>Ship Weight</i>	82 lbs
<i>Power Outlet Requirement</i>	5A, 120V/2.5A, 240V, 120/240V selector

HSU Speaker System Limited Warranty

If the speaker system proves to be defective in materials or workmanship within seven years from the date of the original customer's purchase, or the amplifier within two years, we will, at our option, repair or replace the defective product.

***DISCLAIMER**

THE WARRANTY STATED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE AND ALL OTHER LIABILITIES AND OBLIGATIONS OF HSU, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. HSU HAS NOT MADE AND DOES NOT HEREBY MAKE ANY OTHER REPRESENTATION, WARRANTY OR COVENANT WITH RESPECT TO THE CONDITION, QUALITY, DURABILITY, DESIGN, OPERATION, CAPACITY, FITNESS FOR USE OR SUITABILITY OF THE SPEAKER SYSTEMS.

Exclusion of Certain Damages

HSU's liability for any defective product is limited to repair or replacement of the product at our option. HSU shall not be liable for incidental or consequential damages of any kind or character because of product defects. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply.

This Warranty Does Not Cover:

- Damage caused by abuse, accident, misuse, negligence, or improper operation.
- Products that have been altered or modified.
- Any product whose serial number has been altered, defaced, or removed.
- Normal wear and maintenance.
- Damages caused by shipping. (All claims for shipping damage must be made with the carrier.)

Warranty Service

Warranty service must be performed by Hsu Research or an authorized service center.

All warranty repairs must be accompanied by the original bill of sales. No other document is acceptable or is required. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Due to our continual efforts to improve product quality as new technology and techniques become available, HSU reserves the right to revise its Speaker Systems specifications without notice.

Notes



Innovation, Performance, Value

HSU Research
985 N. Shepard St.
Anaheim, CA 92806
1-800-554-0150
HSURESEARCH.COM