LSR4312SP

Linear Spatial Reference

Powered Subwoofer

Owner's Manual

JBL
PROFESSIONAL

Important
Safety Instructions

1. **Read These Instructions** - Before operating your new JBL product, please read safety and operating instructions.

2. **Keep These Instructions** - For future reference and troubleshooting purposes, retain these instructions.

3. **Heed All Warnings** - All warnings in this manual should be followed.

4. **Follow All Instructions**

5. **Water and Moisture** - This product is intended for indoor use only. Do not use this apparatus near water or plumbing fixtures.

6. **Cleaning** - Do not use any solvent based cleaners on the finish. To clean enclosure, turn off speaker and disconnect power cord then clean only with a lint-free cloth moistened with water.

7. **Ventilation** - Do not block any ventilation openings, including the Linear Dynamics Aperture Port on the monitor systems. Install these products in accordance with manufacturers instructions. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat. Separate product from surrounding materials and walls by 100 mm (4 in) or more on each side and top of product.

8. **Grounding and Power Cords** - Protect the power cord from being walked-on or pinched, particularly at the plug's convenience receptacle and the point where it connects to the apparatus. Do not defeat the safety purpose of the grounding type plug. The power cord supplied with your powered product has a plug with 2 blades plus a 3rd grounding prong. Do not cut off or damage the grounding prong. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

    All powered products are fitted with a detachable power cord (supplied) which connects to the chassis AC connector. The speaker should be positioned such that the IEC power cord can be easily removed. The power cord has an IEC female connector on one end and a male mains connector on the other end. This cord is supplied specifically to accommodate the different safety and electrical code requirements of individual countries. The model is designed to operate within a specified voltage range and must not be connected to a power source that does not conform to the specified voltage range. If you are traveling abroad with your system, confirm the power mains supply the specified voltage before connecting your equipment to the power mains.

9. **Options** - Only use attachments or accessories specified by JBL Professional.

10. **Non-use Periods** - Unplug this apparatus during lightning storms or when it will be unused for long periods of time.

11. **Servicing** - Refer all servicing to qualified service personnel. Servicing is required when the apparatus does not operate normally or has been damaged in any way, including: power supply cord or plug is damaged, water or other liquid has been spilled or objects have fallen into the apparatus.

12. **Carts and Stands** - The appliance should be used only with carts or stands that are sturdy and well balanced. All appliance and cart combinations should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

Important Safety Instructions

13. **Fire** - No naked flame sources, such as lighted candles, should be placed on the surface, of the apparatus.

Explanation of Graphic Symbols

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

The lightning flash with the arrowhead symbol, within an equilateral triangle, is to alert the user to the presence of insulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

CAUTION: TO REDUCE THE RISK OF ELECTRONIC SHOCK - DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL. DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE. AVIS: POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN!
DO NOT EXPOSE
TO RAIN OR MOISTURE!

ATTENTION
RISQUE DE CHOC ÉLECTRIQUE
NE PAS ENLEVER!
NE PAS EXPOSER Á
LA PLUIE NI Á L'HUMIDITÉ!

Table Of Contents

Introduction

Congratulations on your purchase of the JBL LSR4312SP Linear Spatial Reference Powered Subwoofer.

We know that very few people read owner's manuals from cover to cover, so we've organized this one to make it easy to find the information you need.

The **Features** section on the next page provides a brief overview of the exceptional features of the LSR4312SP. It's followed by a **QuickStart** section, which will get you up and running in a matter of minutes.

Once you've got your LSR4312SP powered up and delivering sound, you should turn to the **Reference** section, which describes every feature and function of the LSR4312SP in detail. Finally, we've included a number of technical appendices and specifications at the end of this manual.

Note that this owner's manual covers the model LSR4312SP subwoofer only. Separate documentation is provided for the LSR4328P and LSR4326P model studio monitors and for the LSR4300 Control Center software and is available for download at www.jblpro.com/lsr.

Manual Conventions

The following conventions will be used in this owner's manual:

◀ Especially important tips and cautions will be presented like this.

Button Lit   **Indicates that a button is lit.**

Button Blinking
Indicates that a button is blinking.

LEDs Lit Green

Indicates that an LED is lit green.

LEDs Lit Red

Indicates that an LED is lit red.
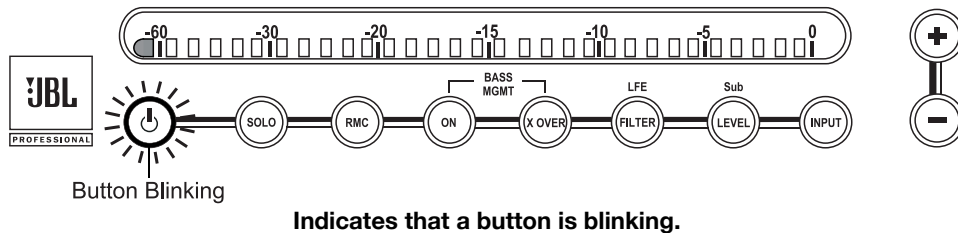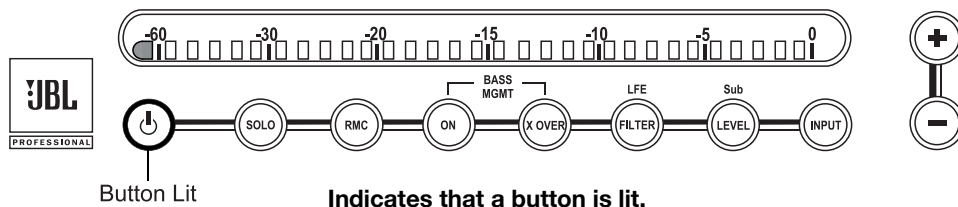
This owner's manual assumes that your LSR4312SP subwoofer is being used in a networked system consisting of one or more JBL 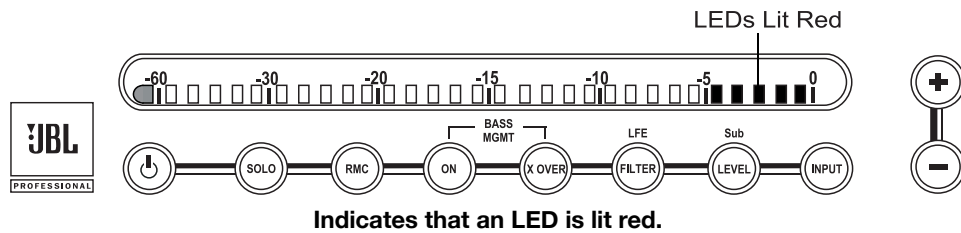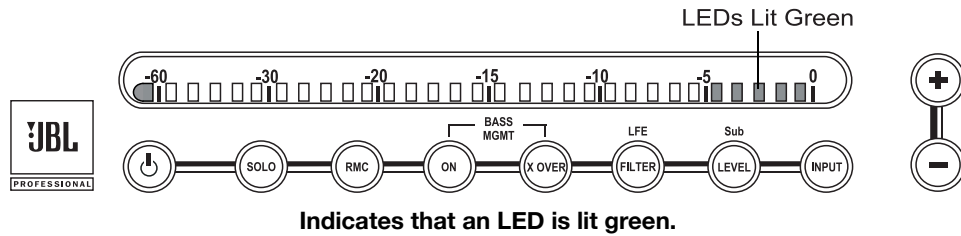LSR4328P and/or LSR4326P studio monitors. However, the LSR4312SP can also be used with other speakers, although some of its most advanced features will not be functional. See Appendix C on page 44 for a full description of how to use the LSR4312SP in a non-networked system of speakers other than the LSR4328P / LSR4326P.

Features

Using a combination of JBL's legendary expertise in acoustics and cutting-edge digital technology, the LSR4312SP subwoofer has been designed to provide the all-important low frequency content of your mix with accuracy and precision. Because it is capable of reproducing frequencies as low as 20Hz, it extends the range of your system, and its many advanced features make it ideal for use in professional music, postproduction, and broadcast applications.

RMC™ Room Mode Correction

The biggest challenge for anyone producing audio is creating a mix that sounds great on all playback systems. If you think of a monitoring system as a kind of "lens" through which you hear sound, the object is to have the lens be crystal-clear and transparent so that it imparts no coloration whatsoever to the signal being played back. However, every loudspeaker system, no matter how well designed, interacts with the room in which it is installed. Lack of correct acoustic treatment (or, worse yet, lack of any treatment at all) can result in anomalies such as resonant frequencies and low-frequency "standing waves" – the aural equivalent to the lens being "smeared." Trying to create a mix in such an environment can be as frustrating and difficult as trying to paint a masterpiece while blindfolded.

JBL's exclusive second generation RMC™ Room Mode Correction technology is designed to solve the problem. A powerful onboard computer in each LSR4300 loudspeaker and LSR4312SP subwoofer automatically analyzes the frequency response of your room and compensates for low frequency inaccuracies in the listening space by precisely inserting filters so that all signals arrive at the mix position with the intended frequency response. In effect, the LSR4300 Series goes "beyond accurate," allowing

you to eliminate the guess-work and create reliable mixes that translate to any environment. Additionally, the RMC process automatically trims all speaker levels and, in the LSR4312SP, even sets the correct polarity so as to compensate for variations in placement relative to the mix position, thus ensuring balanced mixes that are neither bass-heavy nor bass-light.

HiQnet™ Networking

The LSR4300 Series incorporates the new Harman HiQnet™ protocol that networks up to eight studio monitors and two subwoofers in a system and allows full control from the front panel, a wireless remote control, or from a computer via a standard USB connection and LSR4300 Control Center Software. With the push of a button or the click of a mouse, you can change the system level, choose from any of three different inputs (one analog and two digital), solo individual speakers and subwoofers, and make adjustments to various parameters such as bass management and LFE filtering. HiQnet™ networking also allows bass management for the entire system to be turned on or off, again at the push of a single button or click of the mouse. (See Appendix A on page 34 for more information.)

LSR Linear Spatial Reference Design

The LSR4312SP subwoofer employs the Linear Spatial Reference technology that has made the LSR4300 and LSR6300 Series of studio monitors so popular in recording, postproduction, and broadcast facilities worldwide. It has been designed from the ground up to provide accurate in-room response in a wide variety of acoustic spaces.

Surround Smart

The LSR4312SP subwoofer is ideal for surround sound production. Up to eight main speakers (any combination of LSR4326 and LSR4328 models) and up to two LSR4312SP subwoofers can be easily configured for LCRS, 5.1, 6.1, theatrical 7.1, and larger mixing and monitoring applications.

Once all LSR4300 monitors and subwoofers are positioned, RMC and HiQNet™ automatically calibrates the entire system, setting relative volume and subwoofer polarity so that the sound from all channels is properly balanced when it arrives at the mix position. The end result is precise balance regardless of each speaker's actual physical placement.

The ability to centrally control the volume of all speakers and selectively mute or solo them (via wireless remote control or LSR4300 Control Center software) is particularly useful in surround sound applications where the recording system does not provide a multi channel monitor volume control, or where adjustable monitor volume is not available when using the mixing system's digital outputs. Similarly, the ability to remotely switch between three digital and analog input sources – all without having to leave the mix position – enhances system capabilities by allowing you to monitor not only the main recording system, but also any two additional connected sources such as DVD and CD players, multi channel processors and encode/decode units. This alleviates the need to purchase additional outboard monitoring hardware.

In addition, a dedicated LFE (Low Frequency Effects) input and advanced onboard bass management features (see Appendix A on page 34 in this manual), as well as the ability to switch bass management on and off remotely, make the LSR4312SP the perfect subwoofer component for the production of surround sound.

Selectable Inputs

The LSR4312SP subwoofer provides six discrete balanced analog XLR inputs (Left, Right, Center, Left Surround, Right Surround, and LFE) with selectable +4dBU / -10dBv sensitivity, as well as balanced ¼-inch inputs for the Left and Right channels. In addition, dual high-resolution 96 kHz stereo AES/EBU and S/PDIF digital inputs are provided. This variety of inputs allows the LSR4312SP to be connected to a wide range of devices, including digital workstations, CD players, DVD players, and multichannel processors. What's more, you can determine which input is to be monitored with the push of a button on either the front panel or wireless remote or click of a mouse (via an attached computer and LSR4300 Control Center software*).

Other Features

- 12-inch self-shielded transducer with neodymium motor structure, self-powered with 450 watts of
internal amplification, eliminating the need for external amplifiers or speaker cabling.

- Ultra-low frequency response to 20Hz, measured in-room.

- Advanced front-panel user interface allows control of system functions such as volume, solo, input selection, RMC initiation and bypass, bass management on/off, bass management crossover and LFE lowpass filter selection, and brightness level of the meter and buttons.

- Front panel meters show continuous output levels in dBFS.

- Built-in side handles aid in the positioning of the LSR4312SP subwoofer.

Note:

* Use of the wireless remote control and LSR4300 Control Center Software requires that the LSR4312SP subwoofer be used in a system with one or more LSR4328P or LSR4326P studio monitors.

Quick Start

The LSR4312SP subwoofer includes:

- • One subwoofer

- • CAT5 network cable

- • AC power cord

- • This owners manual

If you're planning to use your LSR4312SP in a networked system of LSR4300 speakers, you will need the following:

- • One or more LSR4328P or LSR4326P speakers, with CAT5 network cables, AC power cords, and owners manual

- • LSR4300 Accessory Kit, containing:

    o Calibration microphone and mic clip

    o Infrared wireless remote control

    o LSR4300 Control Center Software

    o 16-foot USB cable

    o Two network terminators

    o Two AAA batteries

Here are simple step-by-step instructions to get you up and running quickly:

1. Unpack the LSR4312SP. To avoid damage to the speaker elements, open the top of the box, keep the styrofoam end cap on, and roll the box upside down. The box can then be slipped off. (This also works in reverse for repacking the units.)

◀ Be sure to not grasp the LSR4312SP from the front. A stray hand or finger can cause damage to the transducer.

2. Position the LSR4312SP in the room.
(See page 24 in this manual for subwoofer placement tips.)

Input Sensitivity switch

Analog audio LFE channel input/output connectors

+10dB LFE Gain switch

Digital audio connectors

CAT5 connectors

USB connector

DIP switches

Active Input display

AC connector

Fuse

JBL PROFESSIONAL

LSR4312SP
Linear Spatial Reference Powered Subwoofer

-10 dBV   +4 dBu

LFE

IN

OUT

+10dB GAIN

LEFT

IN

OUT

IN

RIGHT

IN

OUT

IN

IN   OUT

S/PDIF

AES/EBU

IN

OUT

CENTER

IN

OUT

HiQnet™

USB

SPEAKER ID*
DIGITAL IN
ASSIGN
POLARITY

- SUB 1
- SUB 2
- CHANNEL A
- CHANNEL B
- BASS MGMT
LFE - - 180°
- 0° -

ANALOG -
S/PDIF -
AES/EBU -
CH A -
CH B -

L SURROUND

IN

OUT

R SURROUND

*To Restore Factory Settings:
Disconnect power source.
Set both Speaker ID switches ON.
Reconnect power source.

POWER

260 Watts

WARNING!
AVIS!

SHOCK HAZARD. DO NOT OPEN.
RISQUE DE CHOC ELECTRIQUE.
NE PAS OUVRIR.

CE   N108

Serial No:

IN

OUT

Patents Pending

See Owners
Manual for Set-Up
and Safety Instructions

Manufactured in China.
Designed and Engineered
in U.S.A.

Analog audio Bass Management input/output connectors

LSR4312SP Rear Panel

3. Connect the LSR4312SP to a suitable power source using the supplied AC power cable.

4. If you are using the LSR4312SP in a system with other LSR4300 studio monitors, network the speakers together in any order using the supplied CAT5 cable. Plug one end of the cable into either of the two HiQnet ports on one speaker or subwoofer and the other end into a HiQnet port on another speaker or subwoofer until all units are connected. Connect the two supplied RJ45 network terminator plugs to the first and last speakers or subwoofers in the chain. (See page 25 in this manual for more information on networking your LSR4300 system.)

5. Set the Network ID DIP switch on the rear panel of the subwoofer. If you are using only one LSR4312SP subwoofer, set only the topmost DIP switch (labeled SUB1) to the ON (right) position and set the second DIP switch (labeled SUB2) to the OFF (left) position. If you are using two LSR4312SP subwoofers, set one to "SUB1" and the other one to "SUB2". (See Appendix B on page 38 in this manual for more information.)

◀   One subwoofer in the system must have the its topmost (SUB1) DIP switch set to the ON position. If you are using two subwoofers, set only one to SUB1 and the other to SUB2. If both switches are accidentally set ON or OFF, the subwoofer(s) will indicate an error condition by strobing five front-panel LEDs and all buttons will begin blinking.

6. Make all required audio connections by connecting your audio devices to the analog and/or digital inputs of the LSR4312SP first, and then use its analog and/or digital outputs to distribute the signal to the main speakers. The LSR4312SP subwoofer is able to accommodate up to six channels of analog signal, and it also includes one stereo S/PDIF digital input and one stereo digital AES/EBU input. The instructions below explain how to interconnect the LSR4312SP with stereo and multichannel (surround) analog and digital sound sources. (See page 28 in this manual for more information on audio connections.)

To connect stereo analog signal sources:

a. Connect the Left and Right analog outputs of the source to the LEFT and RIGHT XLR or ¼□ inputs of the LSR4312SP using appropriate cables.

b. Set the rear panel Input Sensitivity Switch to +4 dBu (switch IN) or -10 dBV (Switch OUT) to match the nominal level of the signal source.*

c. Connect the LEFT and RIGHT outputs of the subwoofer to the inputs of the Left and Right speakers using appropriate cables. (See appendix E on page 46 for a wiring diagram)

To connect multichannel (surround sound) analog signal sources:

a. Connect the Left, Right, Center, L Surround, and R Surround analog outputs of the multichannel signal source to the corresponding XLR Bass Management inputs of the LSR4312SP using appropriate cables.

b. Connect the LFE (Low Frequency Effects) output of the multichannel signal source to the LFE input of the LSR4312SP.

c. Set the rear panel Input Sensitivity Switches for all speakers to +4 dBu (switch IN) or -10 dBV (Switch OUT) to match the nominal level of the signal source. *

If you are uncertain how to set this switch, consult the owners manual for the signal source. Most professional devices output +4dBu level signals and most consumer devices output -10 dBV signals.

d. Connect the LEFT, RIGHT, CENTER, L SURROUND, and R SURROUND "through" outputs of the subwoofer to the inputs of the corresponding speakers. (See the illustration on page 33 in this manual for reference.)

To connect stereo digital signal sources:

a. Connect the digital output of the source to either the S/PDIF or AES/EBU digital input of the LSR4312SP.

b. Set the following DIP switches on the rear panel of the LSR4312SP:

i. Select which channel(s) of the digital stream the LSR4312SP will reproduce by enabling DIP switches #3 and/or #4 for Channel A, Channel B or both.**

ii. To apply bass management to a stereo digital signal, set the LFE / Bass Management DIP switch (switch #5) to Bass Management.

c. Connect the LSR4312SP S/PDIF and/or AES/EBU output to the S/PDIF and/or AES/EBU digital input of the LEFT channel speaker.

d. Connect the S/PDIF and/or AES/EBU output of the left channel speaker to the S/PDIF and/or AES/EBU digital input of the right channel speaker.

* A stereo digital signal can be distributed to speakersin any order using the speaker's inputs and outputs. Such as: L, Sub, R; R, Sub, L; Right Left Sub; Left Right Sub; Sub, L, R; Sub, R, L.

To connect multichannel (surround sound) digital signal sources:

The S/PDIF and AES/EBU inputs may be assigned to receive an LFE (Low Frequency Effects) signal. Bass management of multiple digital signals requires an external bass management processor that provides a monaural or stereo bass managed signal to the subwoofer(s).

a. Connect the digital LFE output of the multichannel source or output of an external bass management processor to either the S/PDIF or AES/EBU digital input of the subwoofer.

b. Set the following DIP switches on the rear panel of the subwoofer:

i. Typically, the digital signal will carry the LFE signal paired with another signal, most often the Center channel signal, on the same wire. Consult your documentation to determine which channel of the digital stream (A or B) carries the LFE signal and set the LSR4312SP to reproduce that channel by enabling either DIP switch #3 for Channel A or DIP switch #4 for Channel B. Do not enable both DIP switches.

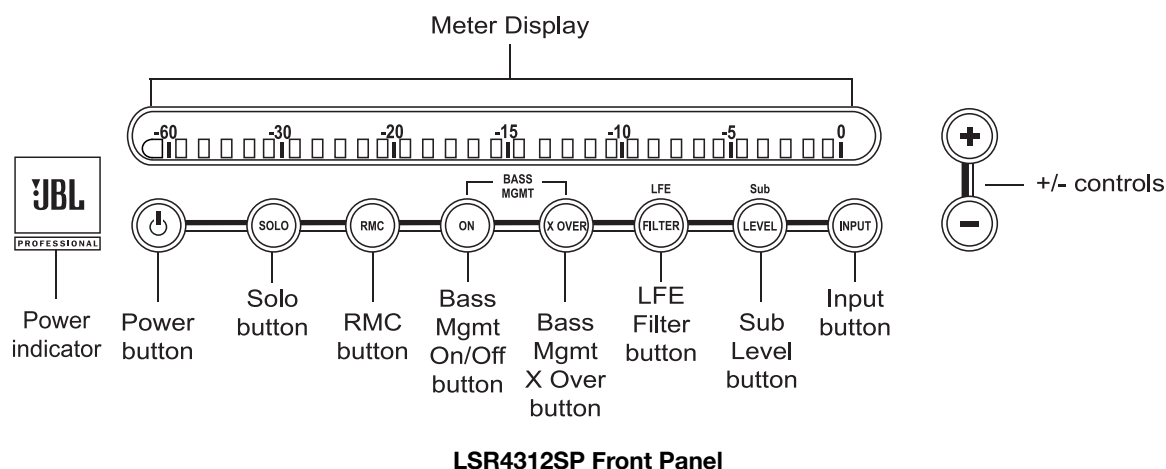ii. Set the LFE / Bass Management DIP switch (switch #5) to LFE.

c. Connect the digital S/PDIF and or AES/EBU output(s) to the other speaker that requires the signal (for example, the Center speaker). (Consult the owners manual for the LSR4328P and LSR4326P for DIP switch settings and speaker ID information.)

d. If the subwoofer is receiving a bass managed signal from an external processor, make sure the LFE Low Pass Filter is set to NONE. (See #8 on page 14 for more information.)

** Typically Ch A= Left channel of the digital signal, Ch B= Right channel of the digital signal.

◄   When using an external Bass Management Processor, set DIP switch #5 to LFE and set Low Pass Filter to NONE.

◄   When using digital audio inputs, the setting of the third and fourth DIP switches determine which channel or channels of the stereo AES/EBU or S/PDIF signal will be reproduced by the LSR4312SP, and at least one of these switches must be in the ON (RIGHT) position. If both switches are placed in the OFF (left) position, all five LEDs in the meter display will strobe and all buttons will blink, indicating an error condition. If both switches are placed in the ON (RIGHT) position, the LSR4312SP will reproduce signal coming from both A + B channels.

Meter Display

+/- controls

Power indicator   Power button   Solo button   RMC button   Bass Mgmt On/Off button   Bass Mgmt X Over button   LFE Filter button   Sub Level button   Input button

LSR4312SP Front Panel

7. Press the front panel INPUT button on the subwoofer or on any networked speaker so that it begins blinking. While it is still blinking, press the + / - controls on any speaker to select the desired input. The front panel LEDs and the rear panel ACTIVE INPUT display shows which of the three inputs (Analog, S/PDIF, or AES/EBU) is currently selected. If a digital input is selected, the rear panel ACTIVE INPUT display also shows which channel(s) are being reproduced by that speaker. See #10 on page 16 in this manual for more information about input selection.

8. Set the bass management crossover and/or LFE filter frequency as desired.

    a. If you are using bass management (see page 34 in this manual for more information), set the Bass Management Crossover frequency as desired by pressing the BASS MGMT X OVER button, followed by the + and – buttons. If you don't know what frequency to use, we recommend starting with the Bass Management crossover set at 80Hz. Press the bass management ON button to enable bass management. The button will illuminate. (See #7 on page 13 in this manual for more information.)

    b. If you are not using bass management, set the LFE Filter frequency as desired by pressing the LFE FILTER button, followed by the + and – buttons. If you don't know what frequency to use, we recommend starting with the LFE Filter set at 80Hz. (See #8 on page 14 in this manual for more information.)

9. Temporarily power down the entire networked system by pressing the front panel POWER button on any speaker or subwoofer, then power on your signal source. Finally, power on all speakers in the networked system by pressing the front panel POWER button on any speaker (or subwoofer) again. All speakers and subwoofers in the system will power on (the JBL Logo will change from dimly to brightly lit.)

◀ To avoid "thumps" which can damage your speakers and subwoofers, always power up the signal source FIRST and your LSR4300 system LAST.

10. Set the initial speaker volume by pressing the + / - controls on the subwoofer or on any speaker. All speakers in the system will go to the designated volume. As the volume is increased, additional LEDs light. We recommend beginning with a modest volume setting, so that only the first ten LEDs or so (up to the "-20") mark are lit.

11. Play the signal source and adjust the overall volume to a comfortable listening level by pressing the + / - controls on any speaker.

12. If your LSR4300 system is brand new, the RMC button on the front panel of all speakers and subwoofers will be lit, indicating that Room Mode Correction has not yet been performed. For more information about calibrating your system with RMC, see page 32 in this manual.

13. Finally, put on some good music to listen to and take a few moments to read the rest of this manual to acquaint yourself with all the features of your JBL LSR4312SP subwoofer.

Enjoy!

Reference

Front Panel
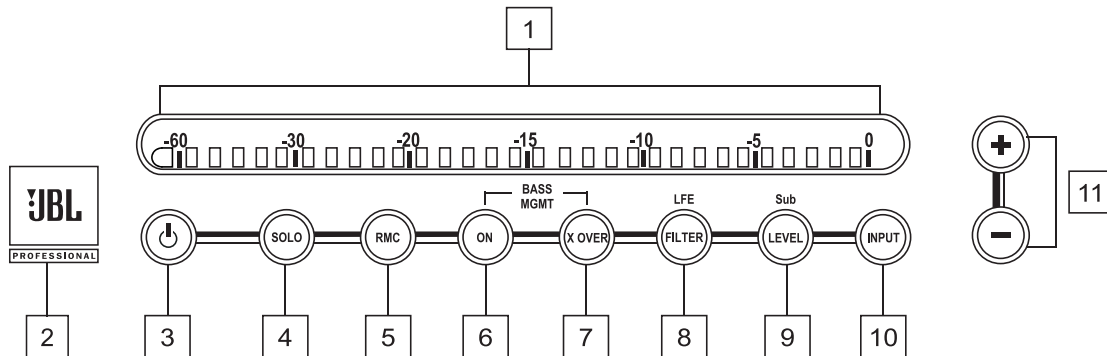
LSR4312SP Front Panel

The controls and displays on the front panel of the LSR4312SP allow you to adjust and view various subwoofer settings. Below is a listing and description of each.

Control and Display:

1. **Meter Display** – In combination with front panel buttons, the meter is used to display the current setting and status of the following functions:

- Power On (see #3 below)
- SOLO function (see #4 below)
- Progress of RMC calibration process (see #5 below)
- Bass management crossover frequency (see #7 below)
- LFE filter frequency (see #8 below)
- Subwoofer Level (see #9 below)
- Input Source selection (see #10 below)
- Overall system volume (see #11 below)
- Meter and button brightness (see #11 below)
- Error conditions

The meter has 31 segments that can illuminate in green, amber or red, plus a 32nd clip indicator segment on the far right that lights red when the LSR4312SP is over-driven. For many of the above-listed operations, all segments light green only. However, when audio signal is being output by the LSR4312SP, all three colors are used and the meter is calibrated to indicate the continuous output in decibels (dB) below the subwoofer's full output capability. Green LEDs indicate signal 8 dB (or more) below clipping; amber, approximately 7 to 4 dB below clipping; and red, approximately 3 to 0 dB below clipping. The segment furthest to the right illuminates red when the input signal is has reached its maximum value to indicate the onset of clipping.

◀ The LSR4312SP provides protective limiting. Limiting occurs when the output signal exceeds -2 dBFS (that is, when the second LED from the right is illuminated).
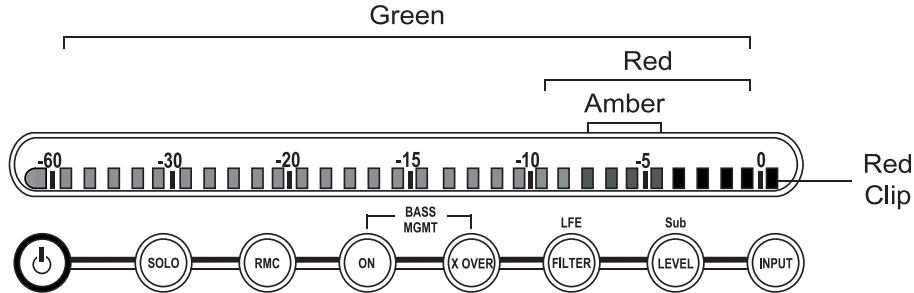

2. **Power Indicator** – The JBL logo lights at two different levels. It is illuminated dimly whenever the LSR4312SP is connected to an AC power source, indicating the subwoofer is in "standby" status. It is illuminated at full brightness when the subwoofer is powered up and active. The power indicator blinks when the system volume "DIM" function is enabled by the remote control or LSR4300 Control Center Software.

3. **Power** – After connection to an AC power source, press this button to turn the LSR4312SP on. If networked together with other LSR4300 speakers, all speakers will turn on simultaneously. Press the button again to return the subwoofer (and all other networked speakers in the system) to a stand-by mode, where the internal amplifiers are turned off and all user functions are deactivated. When the subwoofer is powered on and active, the JBL logo will be brightly lit (see #2 above) and the left-most meter segment will be lit:
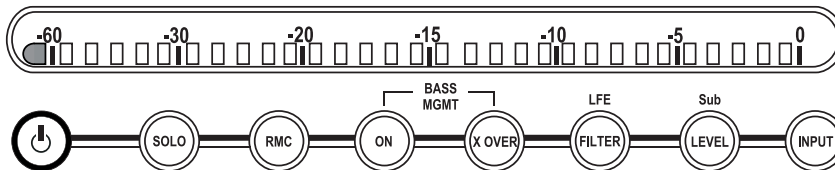
4. **SOLO** – Press this button to solo the LSR4312SP and mute the signal on all other networked speakers. When this function is active, the SOLO button will flash.
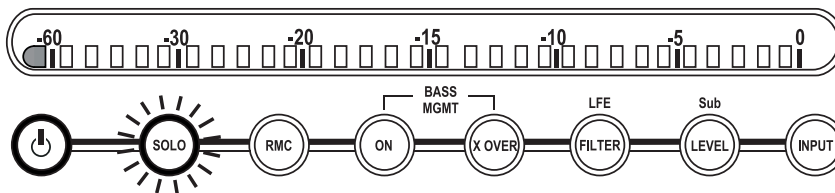
At the same time, the SOLO buttons on all other networked speakers (those that are muted) will light steadily, and their left-most meter segments will flash to indicate a muted state.
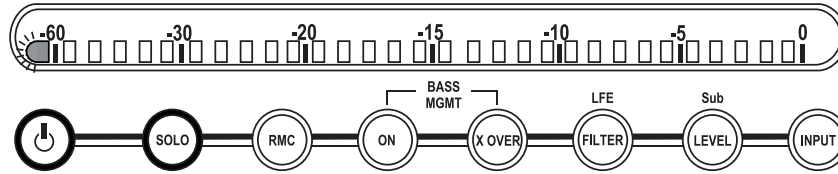
To end Solo and unmute all other networked speakers, press the SOLO button again.

◀ All front panel button actions can be cancelled at any time simply by pressing the button a second time.

5. **RMC Room Mode Correction** – This button is used both to initiate an RMC calibration and to bypass RMC settings after calibration (in order to compare the results of RMC with the uncorrected signal). RMC calibration can only be initiated when the LSR4312SP is connected to a network that includes at least one LSR4328P or LSR4326P speaker with the calibration microphone connected to its rear-panel input; thus, it cannot be performed solely with an LSR4312SP alone. For information about RMC, see page 32 in this manual. For RMC calibration procedure, consult the LSR4328P or the LSR4326P studio monitors owners manual.

◀ When a brand new LSR4312SP is first powered on or if its factory settings have been restored (see page 32 in this manual), or when the bass managment crossover frequency selection is changed, the RMC button lights steadily to indicate that an RMC calibration needs to be performed.
For more information, see page 30 in this manual.

6. **Bass Management ON** – Press this button to turn Bass Management ON and OFF. (The button will light steadily green when it is ON.) When bass management is on, the LSR4312SP will reproduce signal arriving at all connected analog inputs (or at the selected S/PDIF or AES/EBU digital inputs). When bass management is off, the LSR4312SP will reproduce only signal arriving at the analog LFE input or at the digital input designated to carry LFE signal. For bass management to function when using a digital signal source, the rear panel DIP switch 5 must be set to the "Bass Management" (right) position (see page 21 in this manual for more information); in that case, the LSR4312SP will reproduce signal arriving at either or both of the selected digital input channel(s), as determined by the settings of DIP switches 3 and 4. For more information, see Appendix A on page 34 in this manual.

◀ Whenever turning Bass Management ON or OFF, all networked LSR4300 speakers will flash their illuminated JBL logos to indicate the change in status.

◀ If a second LSR4312SP is networked, turning Bass Management ON in either one will cause both to be set identically.

7. **Bass Management X OVER** (Crossover) – Determines the frequency of the LSR4312SP's lowpass filter employed when bass management is ON; only signals below that frequency will be reproduced by the LSR4312SP. When other LSR4300 speakers are networked to the LSR4312SP, their internal high-pass filters will automatically be set to that same frequency; they will then reproduce only signals above the crossover frequency.
The bass management crossover can be set to either 50Hz, 80Hz, or 120Hz. To make your selection, press the X OVER button. It will flash and the meter display will confirm the currently selected bass management crossover setting. (Bass management will also automatically be turned ON, with the button lit steadily). While the X OVER button is flashing (for approximately 3 seconds), you can use the +/- buttons to change the crossover setting. The new selection will then be displayed on the meter display, as shown in the following illustrations, and will be stored in the LSR4312SP after 3 seconds (or, immediately, by pressing the X OVER button a second time within that 3-second period). For more information, see Appendix A on page 34 in this manual.

13

50Hz

80Hz

120Hz
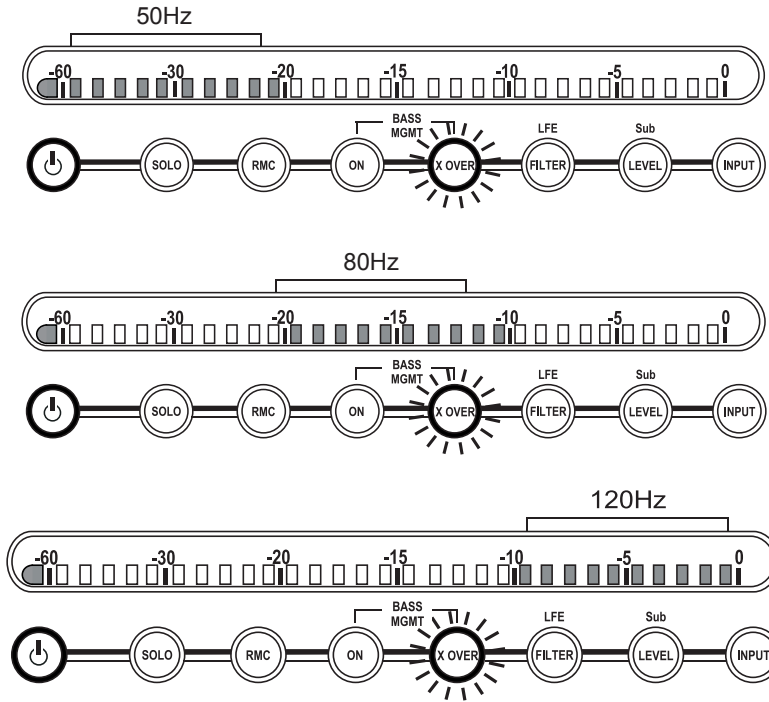
◀ If one of the two digital inputs is selected (see #10 below), the highpass filters in networked LSR4300 speakers will only be activated if the rear-panel Bass Management / LFE DIP switch is set to "Bass Management."

◀ If a second LSR4312SP is networked, changing the Bass Management X OVER frequency in either one will cause both to be set identically.

8. **LFE FILTER** – Determines whether the LSR4312SP's internal lowpass filter will restrict the range of frequencies reproduced when monitoring an LFE signal. Options are 50Hz, 80Hz, 120Hz, or NONE (no filtering). To select one, press the FILTER button. It will flash and the meter display will confirm the currently selected filter setting. While the FILTER button is flashing (for approximately 3 seconds), you can use the +/- buttons to change the filter setting. The new selection will then be displayed on the meter display, as shown in the following illustrations, and will be stored in the LSR4312SP after 3 seconds (or, immediately, by pressing the FILTER button a second time within that 3-second period). For more information, see Appendix A on page 34 in this manual.
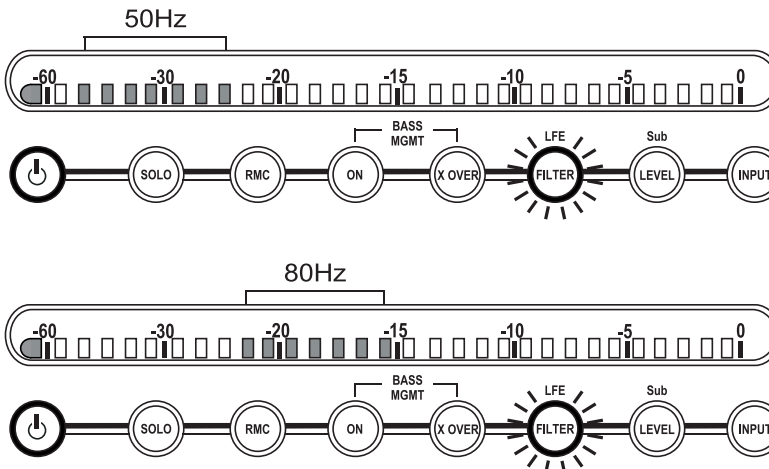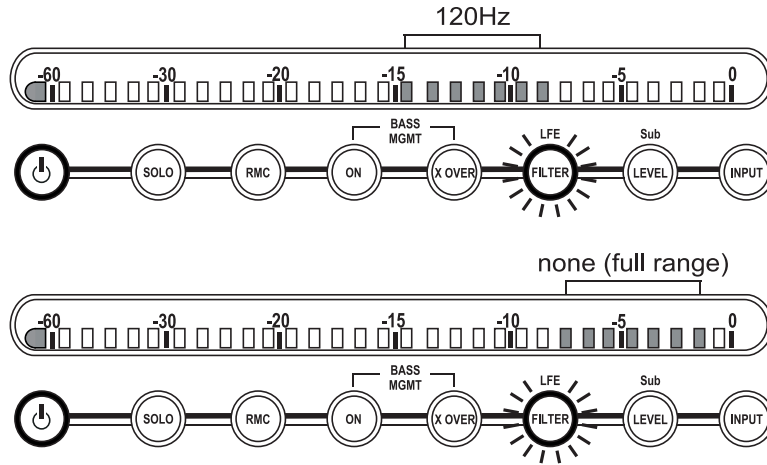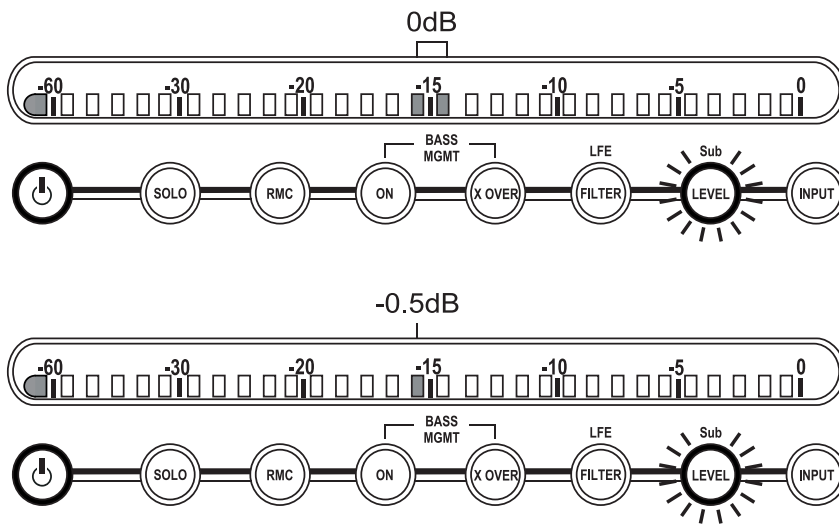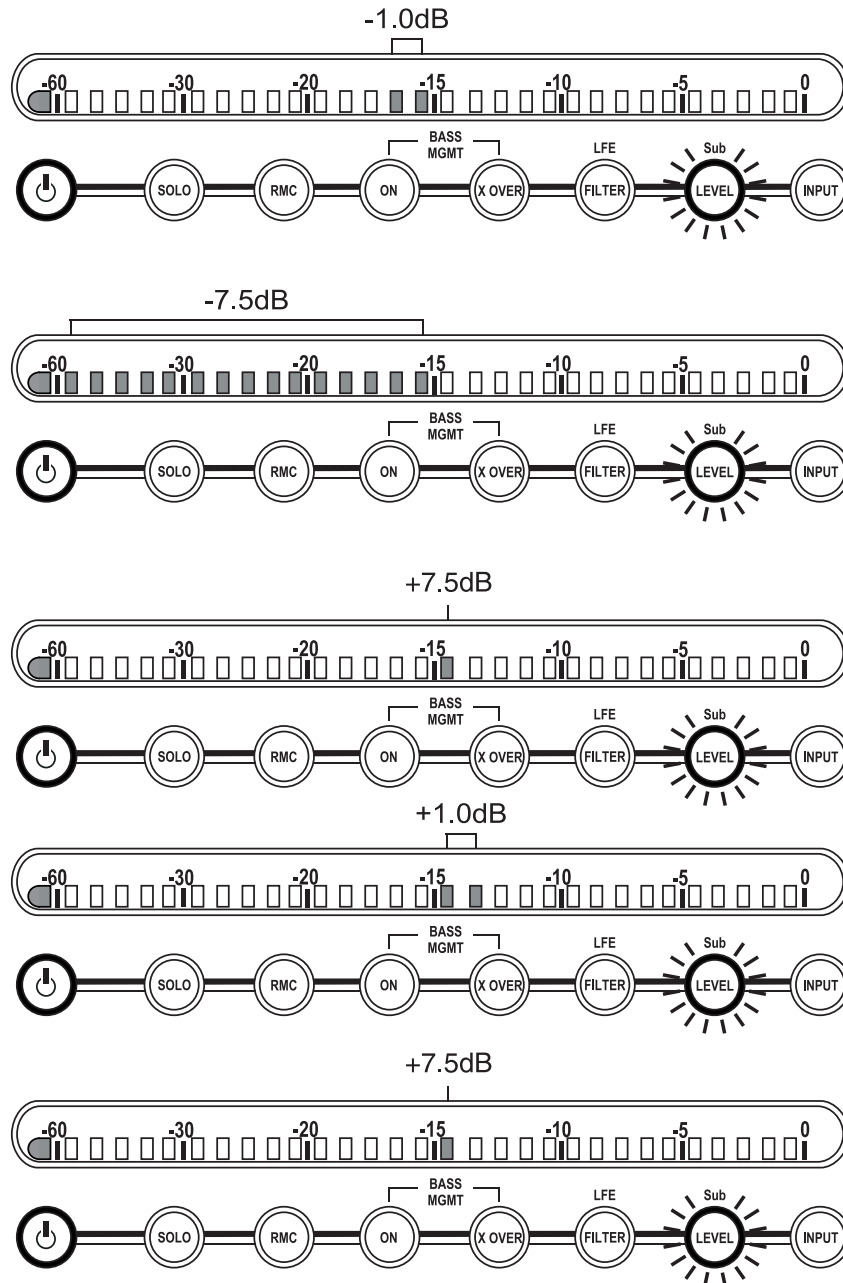
50Hz

80Hz

120Hz

none (full range)

▣ If a second LSR4312SP is networked, changing the LFE FILTER frequency in either one will cause both to be set identically.

9. **Subwoofer LEVEL** – Allows you to make fine adjustment of the subwoofer level, in 0.5 increments, to a maximum of +/- 7.5 dB. This differs from the overall system volume control (see #11) in that it affects the LSR4312SP only; other connected LSR4300 speakers are unaffected.

To set the subwoofer level, press the LEVEL button. It will flash and the meter display will confirm the currently selected level setting. While the LEVEL button is flashing (for approximately 3 seconds), you can use the +/- buttons to change the level setting. The new selection will then be displayed on the meter display, as shown in the following illustrations, and will be stored in the LSR4312SP after 3 seconds (or, immediately, by pressing the LEVEL button a second time within that 3-second period). Note that a level setting of 0.0 dB (the two LEDs on either side of the -15 marker lit) indicates that the subwoofer is at the same relative volume as all other networked speakers, with no boost or attenuation. As shown in the following illustrations, each lit LED indicates 0.5 dB of gain; thus, having all 15 LEDs to the right of 0.0 lit indicates the maximum boost of +7.5 dB, while having all 15 LEDs to the left of 0.0 indicates the maximum cut of –7.5 dB.

0dB

-0.5dB

-1.0dB

-7.5dB

+7.5dB

+1.0dB

+7.5dB

◀ If a second LSR4312SP is networked, changing the Subwoofer LEVEL in either one will cause both to be set identically.

10. **INPUT** (Input Select) – Allows you to listen to any of three connected signal sources:
analog, S/PDIF digital, or AES/EBU digital. To select an input source, press the INPUT button. It will flash and the meter display will confirm the currently selected input source. In addition, incoming signal will temporarily be muted. While the INPUT button is flashing (for approximately 3 seconds), you can use the +/- buttons to change the input source. The newly selected input source will then be shown on the meter display as per the following illustrations, and after a 3-second pause, the signal will resume. To cancel the operation and thus continue with the same input source, either press the INPUT button a second time or wait for the 3-second "time-out" to end without pressing the +/- buttons.
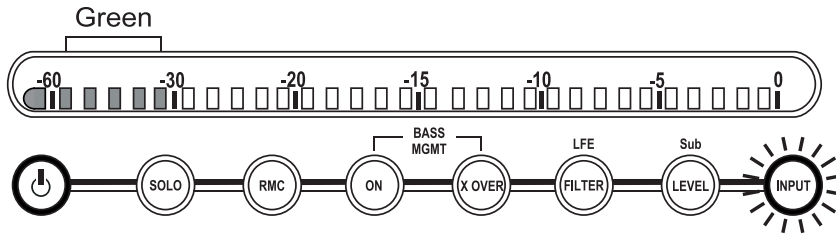
Analog input
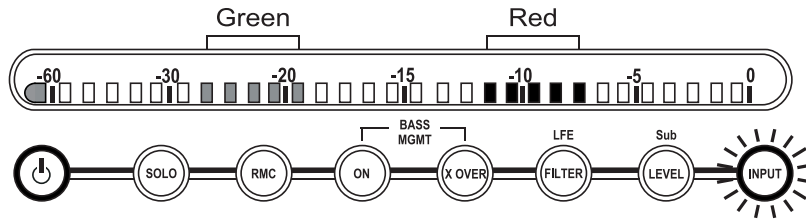
S/PDIF input CH A
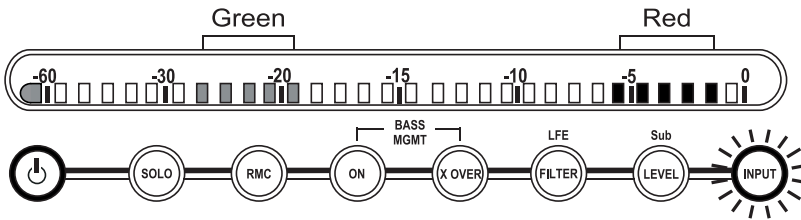
S/PDIF input CH B
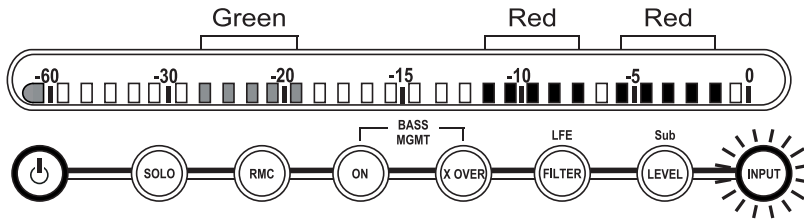
S/PDIF input CH A + B
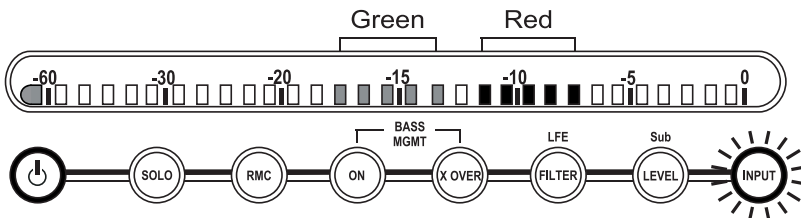
AES/EBU input CH A
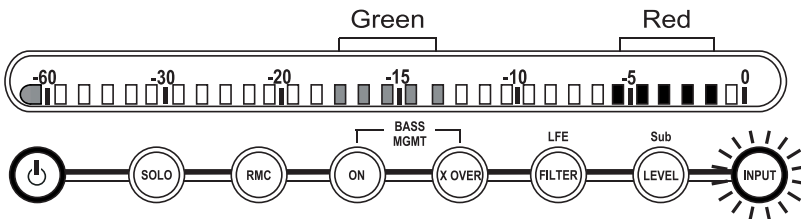
AES/EBU input CH B

AES/EBU input CH A + B
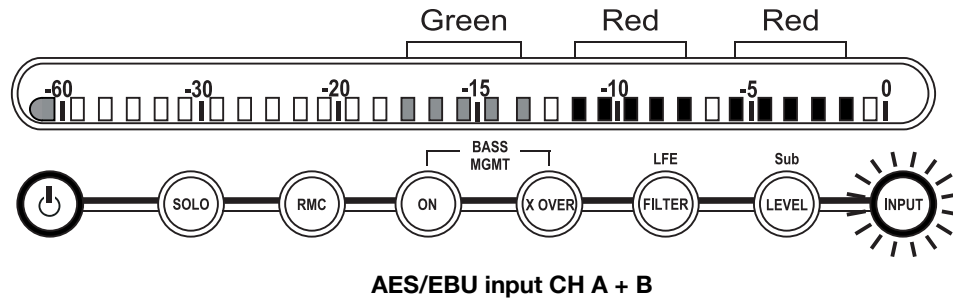
After changing the input source, the Active Input display on the rear panel will indicate the current selection.

◀ Changing the Input Source in any speaker or subwoofer in an LSR4300 network will cause all speakers and subwoofers to change to that source.

◀ If you select a digital input to which no signal is connected, no signal will be heard, and the left-most meter segment will flash to indicate an error condition.

◀ When monitoring digital (S/PDIF or AES/EBU) signal, the third and fourth rear panel DIP switches on the rear panel of the LSR4312SP must be set correctly in order to determine which channel is being reproduced, or whether both channels are being reproduced. If both switches are placed in the OFF (left) position, five LEDs in the meter display will strobe and all front panel buttons will blink, indicating an error condition. If both switches are placed in the ON (right) position, the LSR4312SP will reproduce signal coming from both channels. For more information, see page 21 in this manual.

11. **+/ -** – These increment/decrement buttons have different functions, depending upon whether a front panel button (other than solor) is flashing or not. If a front panel button is flashing, they are used to increment or decrement the value of the selected parameter. For example, if the LFE FILTER button is flashing, the +/- buttons step through the various filter frequencies. If no front panel button is flashing, the +/- buttons adjust the overall system volume. Press the + button to increase system volume and the – button to decrease system volume.

In addition, pressing both the + and – buttons at the same time allows you to adjust the brightness of all front panel buttons and the meter display. There are six settings. At the lowest setting, all buttons and meter segments are completely off, and only the JBL logo glows to indicate power.

Rear Panel

1	**JBL** PROFESSIONAL
	LSR4312SP
	Linear Spatial Reference
	Powered Subwoofer
	■ -10 dBV ▬ +4 dBu
2	LFE
4	IN OUT
6	■ +10dB GAIN
8	IN OUT
7	S/PDIF
9	IN
10	AES/EBU OUT
11	HiQnet
12	USB
13	SPEAKER ID* DIGITAL IN ASSIGN POLARITY — SUB 1, SUB 2, CHANNEL A, CHANNEL B, BASS MGMT, LFE 0°, 180°
14	ANALOG -, S/PDIF -, AES/EBU -, CH A -, CH B -
15	POWER
16	260 Watts

LEFT — 3, 5, 3
RIGHT — 3, 5, 3
CENTER — 3, 5
L SURROUND — 3, 5
R SURROUND — 3, 5

IN OUT

*To Restore Factory Settings:
Disconnect power source.
Set both Speaker ID switches ON.
Reconnect power source.

Patents Pending

See Owners
Manual for Set-Up
and Safety Instructions

Manufactured in China.
Designed and Engineered
in U.S.A.

⚠ WARNING! AVIS! ⚠
SHOCK HAZARD. DO NOT OPEN.
RISQUE DE CHOC ELECTRIQUE.
NE PAS OUVRIR.

CE N108

Serial No:

JBL PROFESSIONAL
Northridge, CA U.S.A.
H A Harman International Company

LSR4312SP Rear Panel

1. **Input Sensitivity switch** – In the OUT position, selects -10 dBV sensitivity for all analog inputs. In the IN position (pressed in), selects +4 dBu sensitivity for all analog inputs.

2. **Analog XLR balanced LFE input connector** – Connect analog audio signal from the LFE channel here.

3. **Analog XLR and ¼" balanced Bass Management input connectors** (Left, Right, Center, L Surround, R Surround) – Connect analog audio signal from the corresponding channel of the signal source to these XLR inputs. Alternatively, analog audio input signal for the Left and Right channels can be connected to the ¼" jacks.

4. **Analog XLR balanced LFE output connector** – Use this to distribute full-range LFE signal to a second subwoofer.

5. **Analog XLR balanced Bass Management output connectors** (Left, Right, Center, L Surround, R Surround) – Use these to distribute incoming analog signal for each channel to the corresponding speaker. Full-range signal is always supplied from of these connectors regardless of bass management settings. (See page 13 in this manual for more information.)

6. **+10 dB Gain LFE switch** – When pressed in, an extra 10 dB of gain is added to the incoming LFE signal. (See Appendix A on page 34 in this manual for more information.)

7. **S/PDIF input connector** (RCA-type) – Input connector for incoming digital signal in two-channel S/PDIF format.

8. **S/PDIF output connector** (RCA-type) – Output connector used to route incoming S/PDIF signal to another speaker.

9. **AES/EBU input connector** (XLR) – Input connector for incoming digital signal in two-channel AES/EBU format.

10. **AES/EBU output connector** (XLR) – Output connector used to route incoming AES/EBU signal to another speaker.

11. **Harman HiQnet™ connectors** (RJ45 x 2) – Used to interconnect the LSR4312SP subwoofer and other LSR4300 speakers for centralized system control from any speaker or via wireless remote control or LSR4300 Control Center Software.

12. **USB connector** – Universal Serial Bus Type I connector for computer connection when updating ("flashing") the internal system software.

> ◀   The USB connector on th LSR4312SP is for firmware updates only. To control the subwoofer using LSR4300 Control Center Software, the subwoofer must be networked with one or more LSR4326P or LSR4328P speakers and Control Center Software must be connected to the "LEFT CHANNEL SPEAKER".

13. **DIP switches** – These six switches are used to set various parameters such as speaker ID and polarity. If one of the two digital inputs is selected, DIP switch settings also determine how the signal will be processed: as an LFE signal or Bass Management, and whether the LSR4312SP is reproducing the left side (Channel A), right side (Channel B), or both sides of the incoming stereo digital signal. To set the DIP switch, gently push the white plastic nub using a small flat-blade screwdriver, a toothpick or other narrow object.

Below is a summary of the functions of the six DIP switches:

DIP switch number	Function
1	Sets the subwoofer ID to SUB1
2	Sets the subwoofer ID to SUB2
3	Selects the left (CH A) digital input*
4	Selects the right (CH B) digital input*
5	Selects either LFE or Bass Management when using digital inputs
6	Sets polarity to either 0° or 180° - enabled only when RMC is not being used. See page 25 for more information on subwoofer polarity.

Set DIP switches 3 and 4 both ON to select both the left and right channels.

The subwoofer rear panel LFE/Bass Mgmt DIP switch setting is ignored when the input source is set to Analog.

When the subwoofer rear panel LFE/Bass Mgmt DIP switch is set to LFE and the input source selection is either S/PDIF or AES/EBU, the Low Pass filter setting for LFE is applied, the front panel Bass Management ON function is disabled and bass management cross over filters are not used. (High Pass filters in LSR4328P and LSR4326P are not enabled).

When the Subwoofer rear panel LFE/Bass Mgmt DIP switch is set to Bass Mgmt, and the input source selection is S/PDIF or AES/EBU, when the front panel Bass Mgmt ON function is not active, there will be no output from the Subwoofer.

◀ If only one LSR4312SP subwoofer is being used, make sure that only the first DIP switch (SUB1) is in the ON (right) position. If two LSR4312SP subwoofers are being used, one should be set to SUB1 and the other set to SUB2; if both switches are placed in the ON or OFF position, all five LEDs will strobe and all buttons will blink, indicating an error condition.

◀ When either the S/PDIF or AES/EBU input is selected, DIP switch #3, for channel A, or, #4, for channel B, or both must be enabled or an error message will be displayed on the meter display.

◀ DIP switches are also used to restore factory settings. See page 33 in this manual for more information.

14. **ACTIVE INPUT display** – Whenever the LSR4312SP is powered on, one of these LEDs will be lit, indicating whether the subwoofer is reproducing signal arriving at the analog input, or one of the two digital inputs (S/DIF and AES/EBU). If a digital input is being used, the display also shows whether the speaker is reproducing the left (Channel A), right (Channel B), or both sides of the incoming stereo signal. For more information, see #10 on page 16 in this manual.

15. **POWER connector** – Accepts the supplied IEC power cable.

16. **FUSE HOLDER** – Holds the power fuse and one replacement power fuse.

Remote Control

The infrared wireless remote control provided in the LSR4300 Accessory Kit allows you to make adjustments to your entire LSR4300 system without leaving the mix position. The remote control duplicates all the controls found on the main speaker front panels such as power on, volume adjust, soloing, input select, EQ adjustment and preset selection. Dedicated buttons are provided to control subwoofer functions.
These are:

1. Bass Management ON/OFF - Toggles the bass management system ON or OFF.

2. Bass Management X OVER Settings - In conjunction with the +/- button, allows modification of
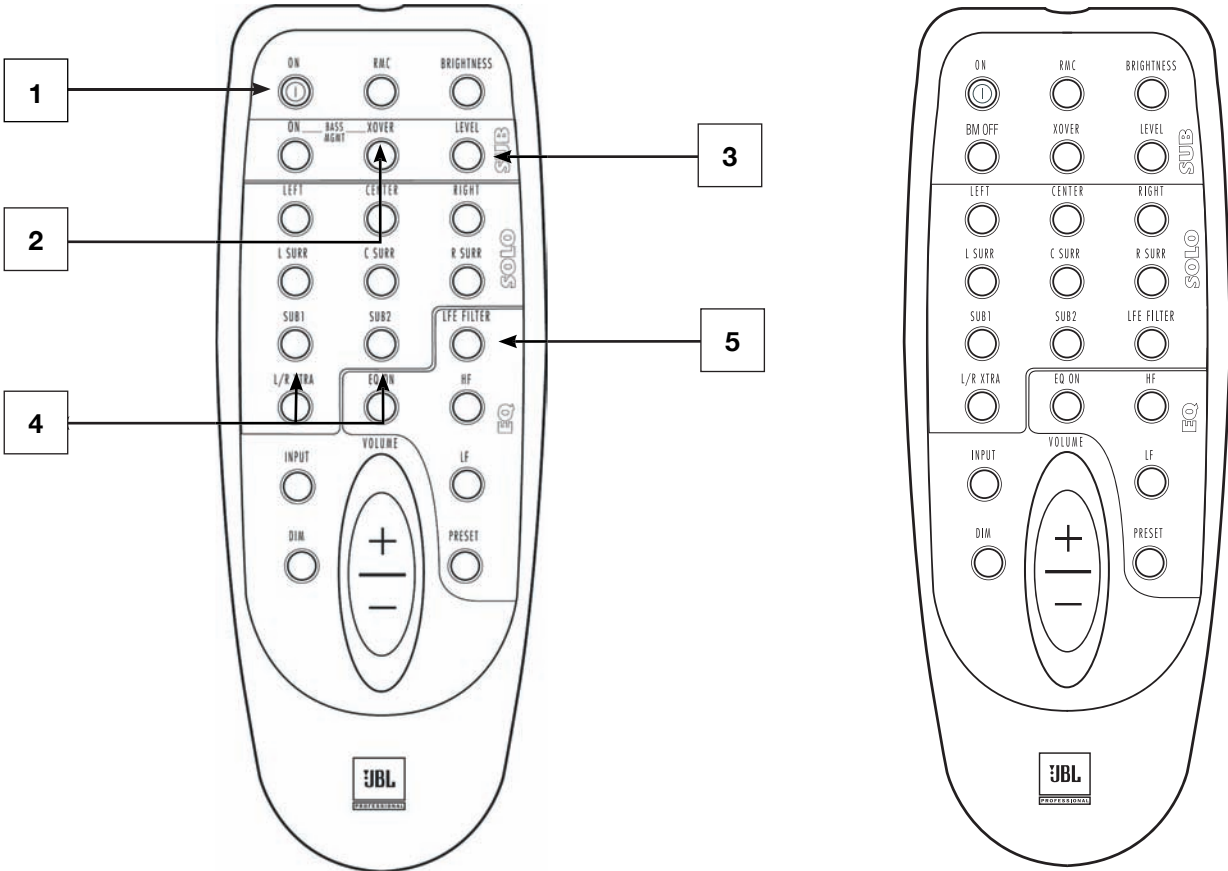
LSR4300 Remote Control   *Earlier version of the LSR4300 Remote Control*

the Bass Management Crossover frequency selection.

3. Sub LEVEL settings - In conjunction with the +/- button increases or decreases the subwoofer level independent of the rest of the system.

4. SUB1 and SUB2 soloing, as well as LFE solo - Mutes all other speakers in the system. Also, in conjunction with Bass Management ON/OFF button, allows isolation of the LFE signal.

5. LFE Low Pass Filter Frequency - In conjunction with the +/- button allows selection of the LFE Low Pass   Filter setting.

◄   Note: Buttons on the earlier versions of the LSR4300 Remote Control are labeled differently such that the function BASS MGMT ON is labeled BM OFF and the function LFE FILTER is labeled LFE. Both versions of the remote control are compatible with the LSR4312SP Subwoofer. Only the labels are different.

◄   The remote control cannot work with an LSR4312SP subwoofer on its own; it only works in a networked system of one or more LSR4328P or LSR4326P studio monitors, and must always be aimed at the speaker designated as the LEFT speaker.

◄   The remote control cannot be used to initiate the RMC calibration process.

To turn Bass Management on or off, press the Bass Mgmt ON button in the "sub" section of the remote.

To adjust the Bass Management X OVER or LFE FILTER settings, with the remote control, press the corresponding button in the "sub" section of the remote, and then use the remote control (+/-) button to make the selection. The corresponding front panel LSR4312SP button will begin blinking and the meter display will update accordingly.

To SOLO the LSR4312SP designated as "SUB 1" (DIP switch 1 set ON), press the SUB1 button in the "Solo" section of the remote.

To SOLO the LSR4312SP designated as "SUB 2" (DIP switch 2 set ON), press the SUB2 button in the "Solo" section.

To SOLO the LFE signal, turn "Bass Management" OFF by pressing the remote control BASS MANAGEMENT "ON" Button, and press the "SOLO" button for Sub 1 and/or Sub 2.

◄   Whenever you DIM the system with the use of either the wireless remote control or LSR4300 Control Center Software, the JBL logo on all networked speakers and subwoofers will blink until the DIM button is pressed a second time, restoring the system volume to its original level.

Note: The EQ ON, HF, LF and PRESET remote control functions are functional only in LSR4328P and LSR4326P studio monitors and do not affect settings in the LSR4312SP subwoofer.

Subwoofer Placement and Polarity Setting

Because the human ear cannot easily recognize where low frequencies are originating from (they are said to be "nondirectional"), subwoofer placement is not nearly as critical as main channel speaker positioning. The LSR4312SP is designed to be placed directly on the floor and not elevated or mounted in any way.

The sixth (bottom-most) DIP switch on the rear panel of the LSR4312SP allows you to manually set the polarity of the subwoofer to either 0° (no change) or 180° (inverse polarity). The correct polarity setting is automatically enabled when an RMC calibration is carried out for a networked LSR4300 system and the switch should always be left in its OFF (0°) position. When RMC is enabled, the switch has no effect. However, if you are using the LSR4312SP in a non-networked system (i.e., with main speakers other than the LSR4328P or LSR4326P), you'll need to manually place this switch in whichever setting yields a stronger perceived bass response at the mix position. (See Appendix C on page 41 in this manual for more information about using the LSR4312SP with speakers other than LSR4328P and LAS4326P.)

When a single subwoofer is being used to reproduce the low frequencies of a stereo system (that is, with bass management), it should optimally all be placed somewhere between the two main speakers. Precise central placement is not necessary. Centered positioning in the room can sometimes cause unwanted cancellation, so it is recommended that the subwoofer be slightly placed off-center and not at the midpoint between the left and right walls.

When two subwoofers are used to extend the low frequency of a stereo system, one subwoofer should be placed near the left speaker and the other subwoofer should be placed near the right speaker.

If a single subwoofer is being used in a surround sound setup (whether or not bass management is being used), it should be placed somewhere near, or behind, the front Center channel speaker.

AC Power Connections

The LSR4312SP voltage is set at the factory for use with either 100V-125V (U.S.) or 200V-250V. The ground terminal of the IEC plug is required by wiring codes and regulations. It must always be connected to the electrical installation safety ground.

CAUTION: Do not use three-pin-to-two-pin AC adapters to defeat the ground.

All LSR4300-series speakers and subwoofers have carefully designed internal grounding and balanced inputs and outputs to reduce the possibility of ground loops (hum). If hum occurs, see Appendix E on page 44 in this manual for suggested audio signal wiring, system grounding hints and other preventive measures.

Network Connections and DIP Switch Settings

The Harman HiQnet™ networking technology employed by the LSR4312SP subwoofer and other LSR4300 speakers enables a number of unique capabilities. Up to two LSR4312SP subwoofers and up to eight LSR4328P or LSR4326P speakers can be interconnected network for control. When speakers are interconnected this way, changes made to one results in the same change being made to all. For example, turning on the power to one speaker causes them all to power up; similarly, altering the meter display brightness of one speaker results in the same change in all the other speakers.

HiQnet networking also allows RMC calibration to be carried out for the entire system at once, and it enables bass management to be instantly switched in or out for all speakers with the push of a single button. What's more, HiQnet makes it possible for all speakers and subwoofers in the system to be controlled using a wireless remote control and/or LSR4300 Control Center Software.

To network your LSR4300 system:

1. Interconnect all speakers and subwoofers using the supplied CAT5 cable. Plug one end of the cable into either of the two HiQnet ports on one speaker or subwoofer and the other end into a HiQnet port on another unit until all components are connected.
(Speakers and subwoofers can be connected in any order).

2. Install the two network terminator plugs (supplied in the LSR4300 Accessory Kit) in the HiQnet ports of the first and last speakers in the chain.

3. Finally, set each speaker's and subwoofer's rear panel DIP switches according to its position in the system. For example, if you are only using a single LSR4312SP subwoofer, set only the top-most DIP switch (labeled SUB1) to the ON (right) position. Similarly, the LSR4328P or LSR4326P speaker reproducing the left channel should have only its LEFT DIP switch turned ON. To set the DIP switch, gently push the white plastic nub using a small flat-blade screwdriver, a toothpick, or other narrow object.

The following illustrations show typical network interconnections and DIP switch settings for both stereo and surround sound use.

Reference - Network Connections and DIP Switch Settings
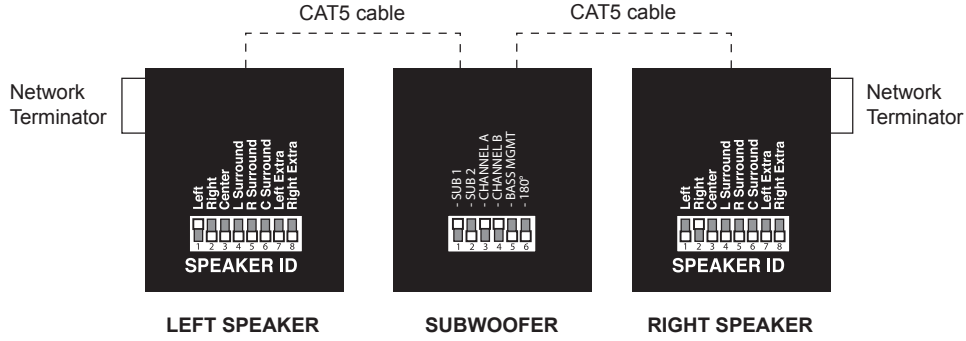
**Networking interconnections and DIP switch settings for stereo use
with LSR4328P and LSR4326P studio monitors**
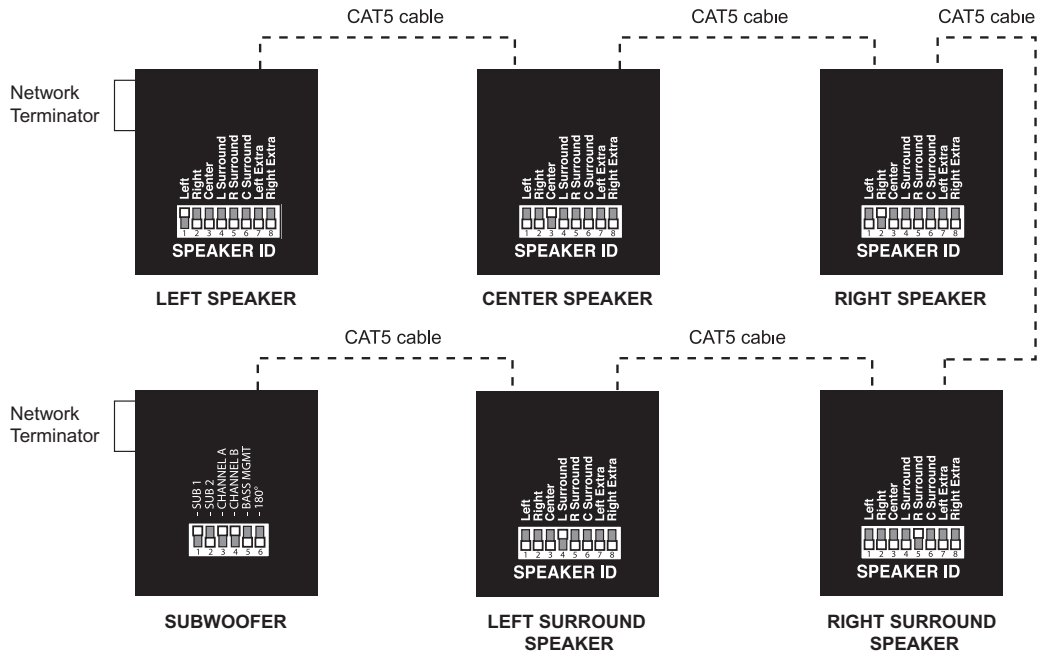
**Networking interconnections and DIP switch settings for surround use
with LSR4328P and LSR4326P studio monitors**

◀ At least one LSR4300 monitor in a networked system must have its LEFT DIP switch set to ON.

◀ Making any of the following changes in the LSR4312SP from either the front panel, wireless remote control, or LSR4300 Control Center Software will cause the JBL logo in networked speakers to blink for approximately 3 seconds:

- Turning Bass Management on or off.
- Changing the Bass Management Crossover frequency.
- Changing the LFE Filter frequency.
- Changing the Subwoofer Level.

This is done to provide visual confirmation if the front panel of the subwoofer is not easily viewable.

Audio Connections

The LSR4312SP subwoofer is equipped to accommodate a wide range of analog and digital signal input sources. You can connect two digital sources and one analog source to each subwoofer and switch between them using front panel controls, the wireless remote control, and/or LSR4300 Control Center software.

Analog Connections

The LSR4312SP provides six discrete XLR analog inputs (Left, Right, Center, Left Surround, Right Surround, and LFE), ensuring compatibility with both stereo and 5.1 surround sound applications and systems. In addition, ¼" inputs are provided for the Left and Right channels. Positive voltage to Pin 2 of the XLR connector or the tip of the ¼" jack will produce a forward motion in the speaker cone. Analog signal sources for the Left and Right channels can be connected to either the rear panel XLR or ¼" connector. Balanced wiring should be used. See Appendix E in this manual for wiring diagrams.

The LSR4312SP provides switchable input sensitivity between +4 dBu and -10 dBV, as determined by the two-position Input Sensitivity switch on the rear panel. When the sensitivity is set for +4 dBu, an input signal equal to +4 dBu will produce a system output level of 94 dB SPL at a distance of one meter. Likewise, a setting of –10 dBV will cause an input level of –10 dBV to attain the output acoustic level of 94 dB SPL at a distance of one meter. Use of the front panel Volume control (that is, pressing the +/- button when no button is flashing) and/or independent subwoofer Level control allows further level matching.

Incoming analog signal is internally routed to the LSR4312SP's high resolution 96kHz, 24-bit, oversampling AD converters. Full-range XLR analog outputs are provided for each of the six analog audio inputs; use these to distribute analog signal to the main speakers in your system and/or a second subwoofer. Connect your analog audio source (mixing console, digital workstation, or other analog audio devices) to the LSR4312SP inputs first, then use the LSR4312SP analog outputs to route the signal to the other speakers in your system. This approach allows the LSR4312SP to carry out optional bass management if desired. Balanced wiring should be used. (See Appendix A on page 34 in this manual for more information.)

Digital Connections

Connect digital sources in AES/EBU format to the LSR4312SP rear panel XLR digital input connector and those in S/PDIF format to the rear panel RCA-type digital input connector. The following sample rates are supported: 96kHz, 88.2kHz, 48kHz, 44.1kHz, 32kHz, with word lengths of up to 24 Bits.

AES/EBU and S/PDIF digital audio is transmitted as a two-channel pair on a single cable. Multichannel digital audio devices typically provide several pairs of outputs with contiguous channel assignments (i.e., Ch 1/2, Ch 3/4, etc.) 5.1 surround sound signal is typically transmitted over three discrete pairs, most often "Left/Right," "Center/LFE," and "Left Surround/Right Surround"; however, you should always check the documentation and system settings of the signal source to verify the assignments being used. (Alternatively, you can use the digital outputs of an external bass management processor.) The LSR4312SP subwoofer can reproduce signal arriving on the left ("A") channel or the right ("B") channel, or it can reproduce both (for bass management purposes). The channel(s) being reproduced is determined by the settings of the third and fourth rear panel DIP switches (see page 21 inthis manual for more information).

◀   If you want to enable bass management when using the digital inputs, be sure to set the fifth rear-panel DIP switch to the "Bass Management" (RIGHT) position. The LSR4312SP can reproduce signal from a maximum of two channels when using the digital inputs. If you need it to reproduce signal from all surround sound channels in a bass managed setup, use the analog inputs instead, or use an external bass management processor, connected to the digital input.

◀   If you want to disable bass management (that is, have the LSR4312SP reproduce the LFE channel only) when using the digital inputs, be sure to set the fifth rear-panel DIP switch to the "LFE" (LEFT) position and connect the correct digital pair (typically the one carrying Center/LFE signal) to the AES/EBU or S/PDIF input, then use the third and fourth DIP switches to select the channel that is carrying the LFE signal (typically the right, "B" channel).

For best results when using digital inputs, always use high-quality cable designed for use with digital equipment. We recommend the use of 110 ohm cabling (not longer than 100 meters, or 330 feet) for AES/EBU connections and 75 ohm cabling (not longer than 10 meters, or 33 feet) for S/PDIF connections.

Typical Audio Connections

The illustrations on the following pages show audio interconnections for integrating an LSR4312SP subwoofer into stereo and surround LSR4300 systems. For information on integrating two subwoofers, see Appendix B on page 36 in this manual.

Note: In 5.1 and 6.1 surround sound applications (that is, wherever there is a dedicated ".1" LFE channel), bass management is optional. Connections to the LSR4312SP analog bass management inputs and outputs (Left, Right, Center, L Surround, R Surround) are therefore `optional; you only need to make these connections if you plan on using bass management. See Appendix A on page 34 in this manual for more information.

Protection Circuitry in the LSR4312SP

Driving a power amplifier beyond its ability to produce clean power produces distortion that can damage the transducer. The LSR4312SP Subwoofer incorporates a peak limiter to reduce short-term peak signal levels that can cause amplifier "clipping" and subsequent distortion. The limiter is set to reduce signals that exceed the level above which the amplifier clips.

In the unlikely event a long-term sustained low frequency input signal causes the system to overheat, a thermal protection system in the LSR4312SP will activate and attenuate the output level of the subwoofer. Normal operation will resume following a reduction of the input signal.

RIGHT SPEAKER

LEFT SPEAKER

Additional digital
audio source

Digital Audio
Workstation with
digital outputs

Additional analog
audio source

L

R

Legend:

AES/EBU audio connection

S/PDIF audio connection

Analog audio connection

LSR4312SP
Linear Spatial Reference
Powered Subwoofer

JBL
PROFESSIONAL
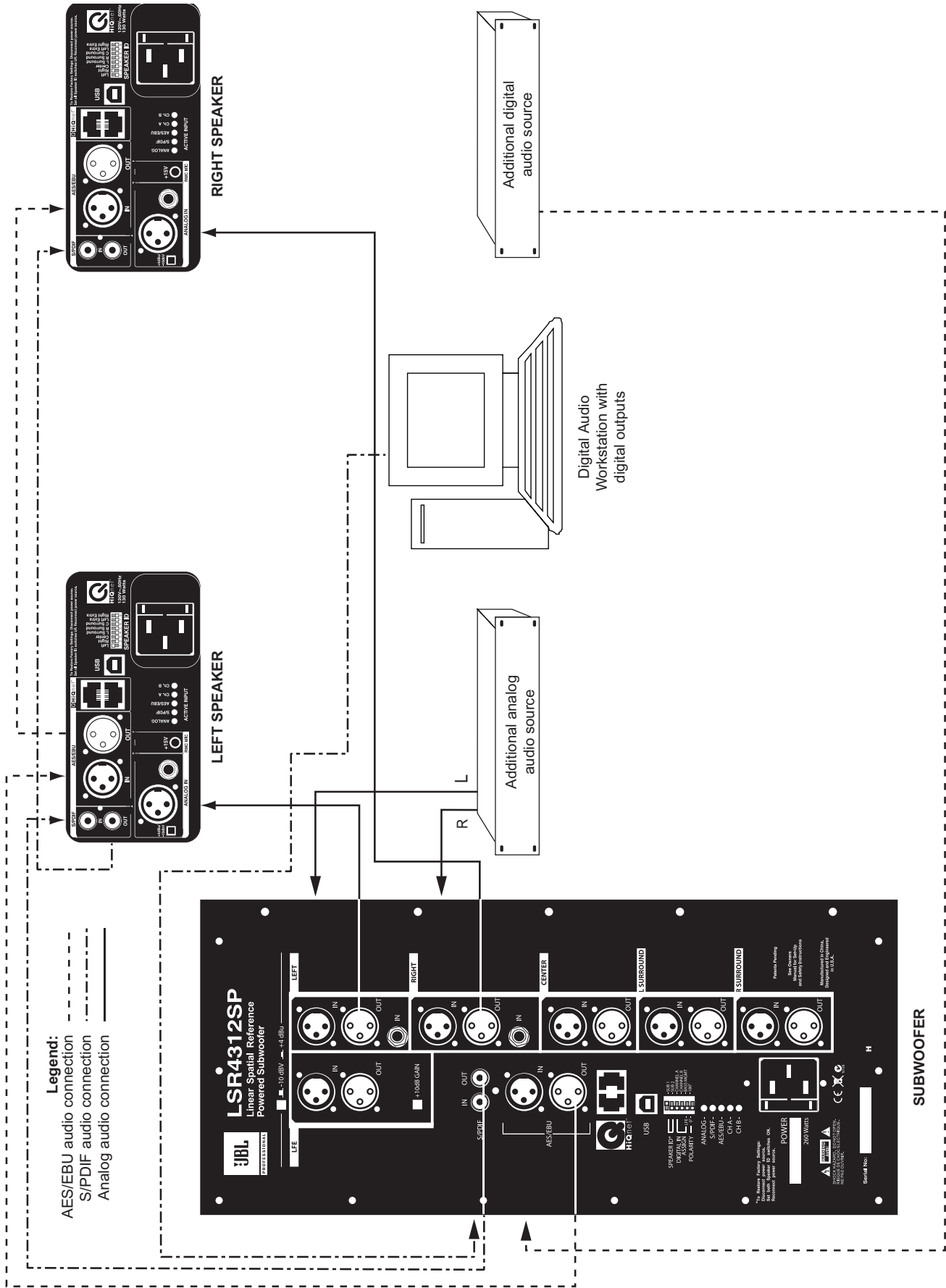
SUBWOOFER

Analog and digital audio interconnections for stereo applications
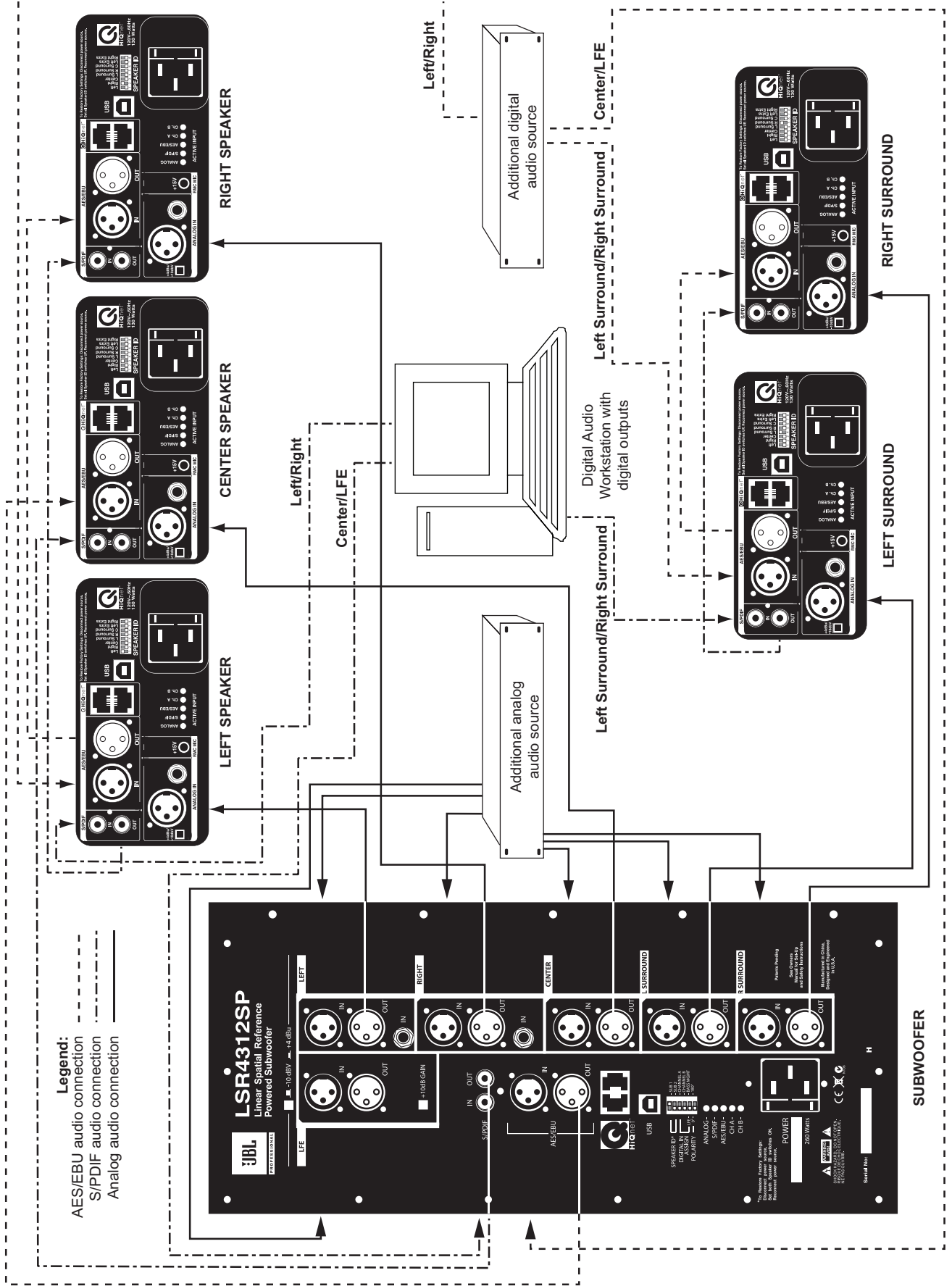
Analog and digital audio interconnections for surround sound applications

RMC™ Room Mode Correction

When loudspeakers or subwoofers are placed in any work space, they and the room behave as a system which, for better or worse, acts as the reference point for creative decisions. When a room has inadequate acoustic treatment, "room modes" (sometimes called "standing waves") can produce, producing low frequency resonances that give a misleading impression of bass response and therefore make it difficult to achieve a proper mix balance. Also, when a speaker is placed in close proximity to a boundry wall, corner or work surface, the response of the system is affected.

The LSR4312SP subwoofer (and all LSR4300 studio monitors) utilizes a revolutionary JBL technology called RMC™ (short for "Room Mode Correction") that is designed to correct the problem. RMC analyzes the frequency response of all speakers and subwoofers at the mix position and automatically applies corrective filters to dramatically minimize low frequency resonance or minimize the effect of boundries. Because room modes create resonance at specific frequencies with very narrow bandwidths (sometimes called "Q"), the on-board analyzer has the intelligence to identify the specific frequency and Q and apply a corrective parametric filter to only the component of the signal that causes the problem.

When the RMC analysis is initiated, the onboard analyzer in each LSR4300 speaker and subwoofer emits a reference tone that is measured at the mix position using a calibration microphone. The computer measures the response received via the microphone and compares it with the original tone being emitted. It determines which if any conditions should be corrected, and then calculates and applies a corrective filter. The entire process takes only a few seconds per speaker.

During the RMC calibration process, the computer trims all speaker and subwoofer levels in fine* increments so that all monitors in the system produce equal SPL (sound pressure level) at the mix position. This ensures that all speakers are balanced and is particularly useful in surround sound applications where space limitations often prevent optimum speaker placement. For example, if the center speaker is closer to the mix position than the other main speakers, attenuation must be applied so your mix balances are correct. Without this correction, your end product will sound unbalanced on a properly calibrated playback system. RMC also automatically adjusts the polarity of the LSR4312SP subwoofer so it sums properly with the main speakers.

When using an LSR4312SP subwoofer, it is important to carry out RMC calibration with the subwoofer set to the mode it will most often be used in. For example, if you plan on using bass management most of the time, carry out RMC with the LSR4312SP bass management turned ON and with the bass management crossover set to the desired frequency. If after performing RMC calibration the bass management settings are changed, RMC will automatically be bypassed and the front panel RMC button will be illuminated. To enable RMC, return subwoofer to prior settings or perform a new RMC calibration. If you don't plan on using bass management most of the time (i.e., if you plan on using the LSR4312SP solely to reproduce the LFE channel), make sure it is turned OFF before performing an RMC calibration. For more information, see Appendix A on page 34 in this manual.

◀ RMC calibration can only be carried out when the LSR4312SP is networked with one or more LSR4300 speakers. Refer to the LSR4328P / LSR4326P owner's manual for a step-by-step description of the RMC calibration procedure.

* LSR4328P, LSR4326P: level trim resolution is ± .25dB. LSR4312SP: level trim resolution is ± .5 dB.

Restoring Factory Settings

Setting the rear-panel Sub1 and Sub2 ID DIP Switches to the ON (right) position and re-powering the LSR4312SP clears all user settings (such as RMC calibration and bass management and filter settings) stored in the speaker's memory.

To clear the memory of a speaker and recall the factory settings:

1. Turn the LSR4312SP subwoofer off and disconnect its power cable.

2. Set the Sub1 and Sub2 DIP switches to the ON position.

3. Re-connect the power cable, wait for the JBL logo to dim, then turn the LSR4312SP back on. All front panel controls will blink and the LED display will flash a left-right pattern to show that memory settings are being recalled.

4. Reset all DIP switches to the desired positions for network operation.

> ◀ User settings such as RMC remain stored in each speaker, even when powered down. For that reason, if you are using an LSR4300 system that you did not personally set, it's a good idea to restore factory settings before using it.

Note: After restoring factory settings, the RMC button in all speakers and subwoofers will light steadily red, indicating that there is no RMC data in memory and that a new RMC calibration needs to be carried out.

LSR4300 Control Center Software

The LSR4300 Control Center Software supplied with the LSR4300 Accessory Kit allows you to control all front panel LSR4312SP functions using a connected Windows or Macintosh computer.

In addition, the onscreen display shows RMC settings in the LSR4312SP as well as polarity and digital input channel selection and assignment (i.e., Bass Management / LFE DIP switch setting).

Other functions allow you to DIM or MUTE the entire system and store and recall entire system configurations.

> ◀ Whenever you DIM the system with the use of either the wireless remote control or LSR4300 Control Center Software, the JBL logo on all networked speakers and subwoofers will blink until the DIM button is pressed a second time, restoring the system volume to its original level.

For more information about the use of this software, refer to the LSR4300 Control Center Software User Guide, provided on disk with the LSR4300 Accessory Kit. Version 2.0 or later software is required for use with the LSR4312SP subwoofer. The latest version of the software and documentation are also available for downloading at www.jblpro.com.

> ◀ LSR4300 Control Center Software cannot work with an LSR4312SP subwoofer on its own; it only works in a networked system of one or more LSR4328P or LSR4326P studio monitors, with the computer connected via USB to the LSR4328P or LSR4326P speaker designated as the LEFT speaker.

Appendix A: About Surround Sound

The term "surround sound" generally refers to any multichannel audio configuration – that is, any setup that consists of more than a single stereo pair of speakers. The most common surround sound configuration is 5.1, consisting of five full-range main speakers (Left, Right, and Center, positioned in front of the listener, and Left Surround and Right Surround, positioned behind the listener) plus a subwoofer (the ".1" channel, so-called because it usually contains only 10% of the frequency bandwidth as compared to the main speakers).

Other surround configurations requiring a subwoofer include, 6.1 which adds a rear center channel to a standard 5.1 configurations and 7.1 which adds left-of-center and right-of-center speakers to a standard 5.1 configuration. Addition of a subwoofer can be used for bass management in these and other surround system configurations.

The LFE Channel
Another term for the ".1" channel is LFE, short for "Low Frequency Effects." This term originated in the film world, where the subwoofer is typically employed to provide extra low frequency reinforcement, generating rumbles and the sounds of explosions, etc. In music applications, the LFE channel usually contains only low frequency instruments such as bass, bass drum, and synthesizer elements. The LFE low-pass filter in the LSR4312SP allows you to monitor the LFE channel as it will sound after it has been mastered, without filtering applied or filtered (at 50Hz, 80Hz, or 120Hz), allowing you to reproduce the final product as it is intended.

+10 dB Gain
Because low frequencies require more energy than high frequencies to be perceived at the same loudness, bass content can easily overload a recording system, especially when using media with limited dynamic range. For this reason, some cinematic systems employ a scheme in which the LFE channel is recorded 10 dB below reference level, with the signal then boosted by the same 10 dB upon playback. Although this practice has largely been abandoned with the rise of modern digital recording media, having provision for this 10 dB of boost allows legacy soundtracks to be played back as they were originally intended. This is precisely the function of the "+10 dB GAIN" switch on the rear panel of the LSR4312SP. Note that setting this switch to the ON position boosts only the LFE channel (regardless of whether analog or digital inputs are being used), not the overall subwoofer level; when bass management is turned on (see next page). This switch does not affect the other channels being reproduced.

Bass Management
"Bass management" is a term that refers to the practice of using a subwoofer to reproduce the bass frequencies of all main channels, in addition to the function of reproducing the independent LFE channel. Because of the physiology of the human ear, low frequencies are largely nondirectional: given an adequate listening distance, we can't easily tell where bass signals are coming from. Thus, it makes little or no difference to the listening experience whether the bass component in a sound comes from the originating speaker (which may be off to your left or right, or even behind you) or from a dedicated subwoofer which is better equipped – and better positioned in the room – to reproduce low frequencies than even a full-range monitor. For that reason, you may want to use your LSR4312SP subwoofer to reproduce all the bass frequencies in your mix. That's the function of the Bass Management button on the front panel: When ON, not only will the LSR4312SP reproduce the bass component (that is, all frequencies below the set crossover [X OVER] frequency) of all channels connected to its analog inputs and, if DIP switch 5 is set to the "Bass Management" position, its digital inputs, but all networked LSR4300 studio monitors will

automatically switch on their internal high-pass filters, set to the same exact crossover frequency. The end result is a perfectly matched system, with the main speakers reproducing all signals above, and the LSR4312SP reproducing all signals below the selected crossover frequency.

Beyond the fact that a subwoofer is designed for the optimal reproduction of low frequencies, bass management can also be used to solve acoustic problems in a room: having all the low frequency signals come from a single source will eliminate low frequency phase cancellation that can occur when the same low frequency signal is reproduced by multiple speakers.

Ultimately, the decision as to whether to use bass management is dependent largely upon the application. There are times when you may need to use the LSR4312SP to monitor the LFE channel only, and other times when the LSR4312SP bass management system is preferred since it allows you to extend the low frequency response of your system and fine tune the way bass is reproduced in the room. Either way, professionals recommend that you always at least check your surround sound mixes with bass management on, since that is the way most consumers will listen to the finished product. The LSR4312SP allows for easy switching between the two modes of operation.
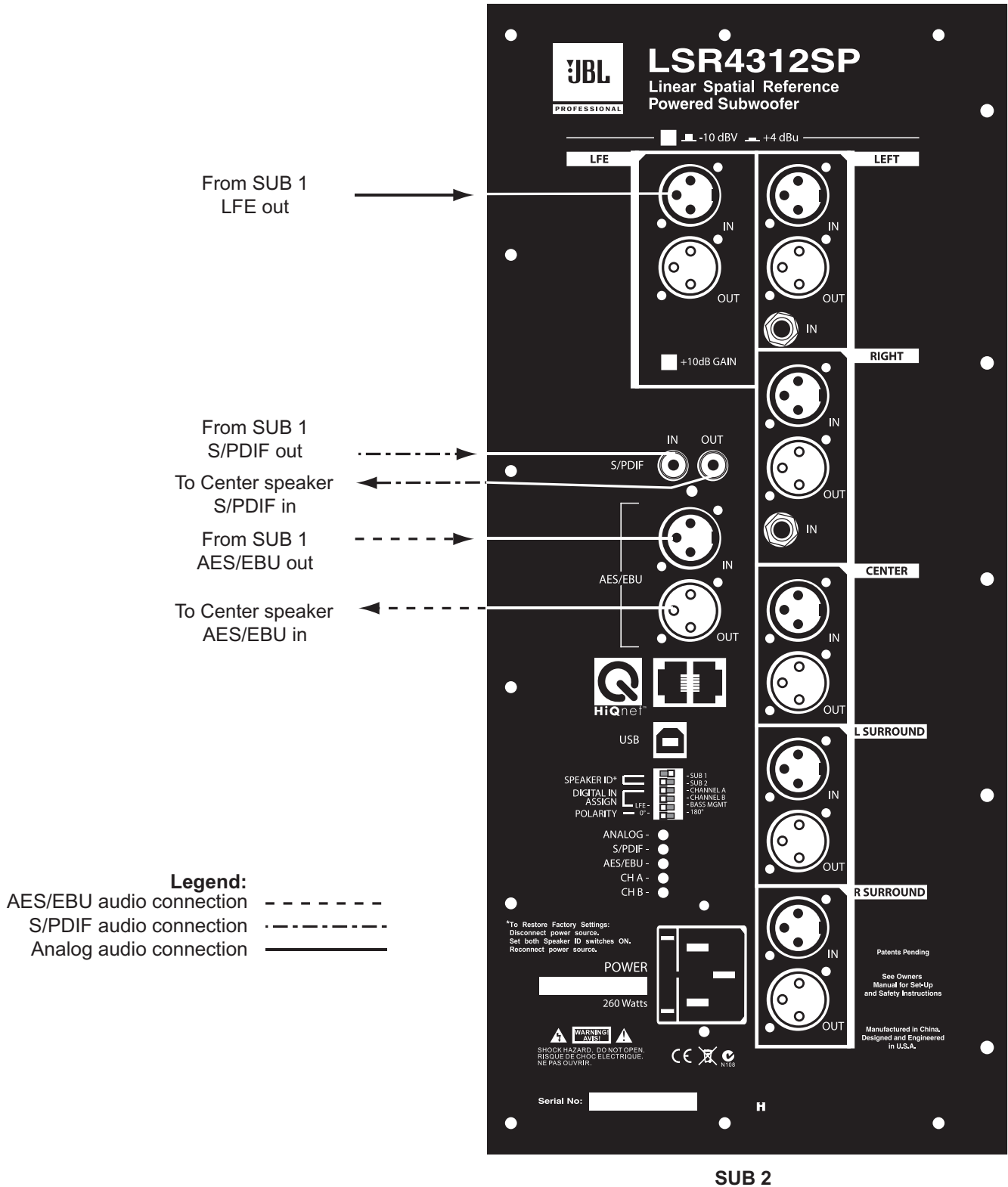
There are also advantages to adding a second LSR4312SP to a surround setup. In large rooms, the addition of a second subwoofer adds additional dynamic range and smooths in-room frequency response.

Appendix B: Using Two LSR4312SP Subwoofers

The LSR4300 system allows for the interconnection of up to eight LSR4328P or LSR4326P studio monitors and up to two LSR4312SP subwoofers. The addition of a second subwoofer provides extra benefits. Adding a second subwoofer to a stereo setup can result in the creation of two extended-range channels if one subwoofer is dedicated to reproducing the low frequencies of the left channel, and the other is dedicated to reproducing the low frequencies of the right channel.

There are also advantages to adding a second LSR4312SP to a surround setup. In large rooms, the addition of a second subwoofer provides additional dynamic range and smooths in-room frequency response. The following illustrations show the interconnections for adding a second LSR4312SP to both bass managed and non bass-managed 5.1 setups.

Two LSR 4312SP subwoofers are required for bass management of 6.1 and larger systems using the analog bass management inputs.
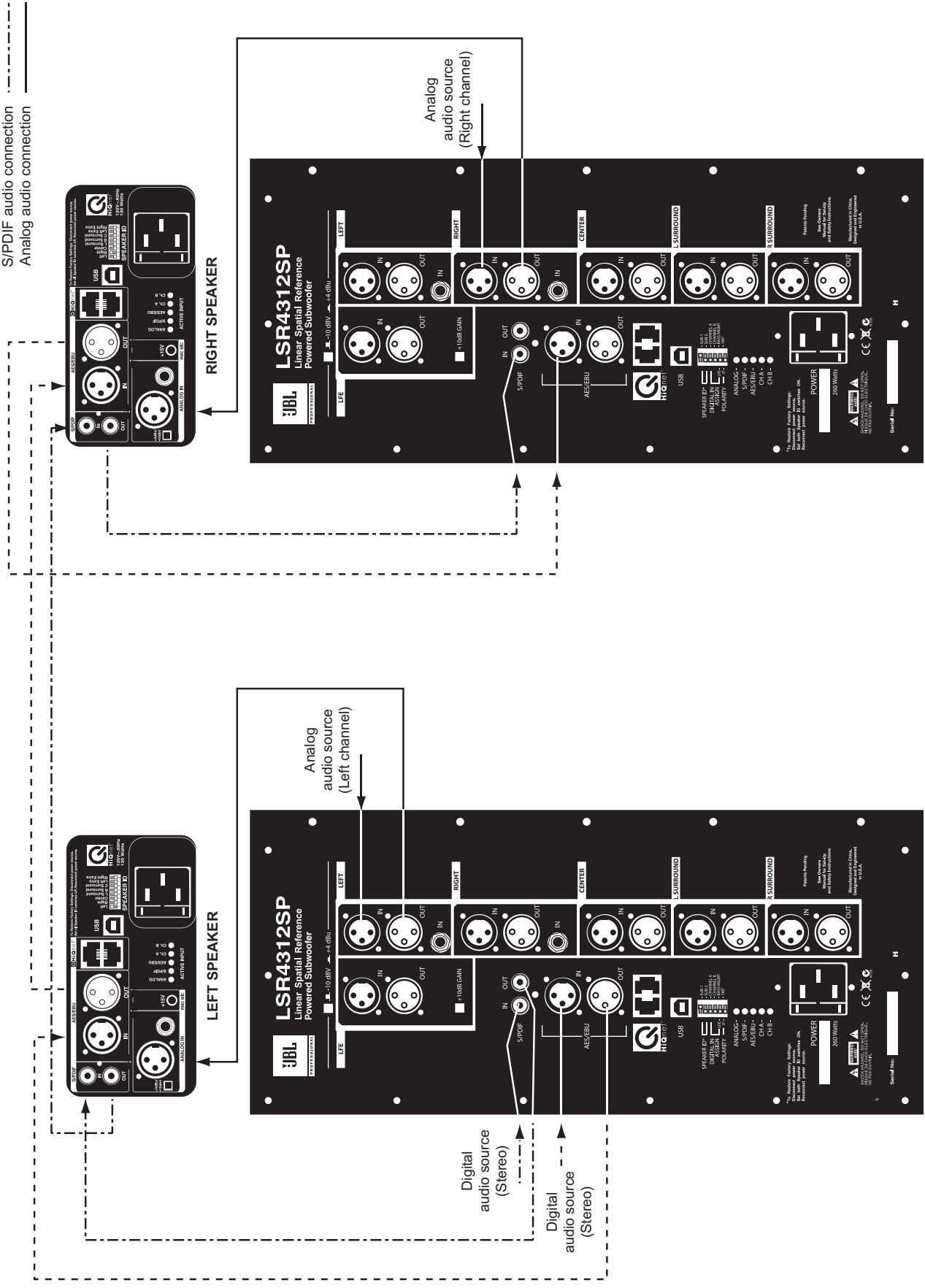
LSR4312SP
Linear Spatial Reference
Powered Subwoofer

-10 dBV   +4 dBu

LFE   LEFT

From SUB 1
LFE out

IN   IN

OUT   OUT

IN

+10dB GAIN   RIGHT

IN

From SUB 1
S/PDIF out

IN   OUT

S/PDIF   OUT

To Center speaker
S/PDIF in

IN

From SUB 1
AES/EBU out

IN   CENTER

AES/EBU

To Center speaker
AES/EBU in

OUT   IN

OUT

USB   L SURROUND

SPEAKER ID*   SUB 1
DIGITAL IN   SUB 2
ASSIGN   CHANNEL A
          CHANNEL B
POLARITY   LFE   0°   BASS MGMT   IN
          180°

ANALOG –
S/PDIF –
AES/EBU –
CH A –   OUT
CH B –   R SURROUND

Legend:
AES/EBU audio connection
S/PDIF audio connection
Analog audio connection

*To Restore Factory Settings:
Disconnect power source.
Set both Speaker ID switches ON.
Reconnect power source.   IN   Patents Pending

POWER   See Owners
          Manual for Set-Up
          and Safety Instructions
260 Watts

OUT   Manufactured in China.
          Designed and Engineered
          in U.S.A.

WARNING
AVIS!

SHOCK HAZARD. DO NOT OPEN.
RISQUE DE CHOC ELECTRIQUE.
NE PAS OUVRIR.   N108

Serial No: H

SUB 2

Interconnections for adding a second LSR4312SP to a non bass-managed 5.1 setup

◀ Note: To use digital inputs in a 5.1 multichannel system, DIP switch #5 should be set to LFE. The LFE Filter should be set to NONE. Multi-Channel/Bass Management using the LSR4312SP digital inputs requires an external bass management processor.

37

Legend:
AES/EBU audio connection
S/PDIF audio connection
Analog audio connection

RIGHT SPEAKER

LEFT SPEAKER

Analog audio source (Right channel)

Analog audio source (Left channel)

Digital audio source (Stereo)

Digital audio source (Stereo)

LSR4312SP
Linear Spatial Reference
Powered Subwoofer

SUB 2

SUB 1

Stereo full-range setup

Appendix C: Using the LSR4312SP with Speakers Other Than the LSR4328P / LSR4326P

Although the LSR4312SP subwoofer is optimized for use with LSR4328P and LSR4326P speakers, it can also be used with other speakers. Many of the main onboard features will work as usual, including:

•Volume

•Meter and button brightness

•Subwoofer LEVEL

•Input source selection

•Bass Management ON/OFF

•Bass Management X OVER settings

•LFE FILTER settings

•Rear-panel phase polarity switch

However, the following advanced features will not be functional when the LSR4312SP is used with speakers other than LSR4326P and LSR4328P.

•Bass management and the effect of the bass management crossover filter will still operate as normal; however, because the signal sent via all LSR4312SP outputs (both analog and digital) is always full-range, you will have to use external processing to set high-passfilters for connected speakers. In order to ensure accurate frequency response, these must be matched to the LSR4312SP crossover frequency. If, for example, you select a cross over frequency of 80Hz in the LSR4312SP, the high-pass filter for the main speakers should also be set to 80Hz.

•The LSR4312SP SOLO button will not function, since there are no other networked speakers to be muted.

•RMC Calibration cannot be carried out.

•Polarity of the LSR4312SP is set manually using the rear-panel DIP switch 6. (See pages 22   and 25 in this manual for more information.)

•The wirelessw remote control will not work.

•LSR4300 Control Center software will not work.

LSR4312P Subwoofer
System Block Diagram
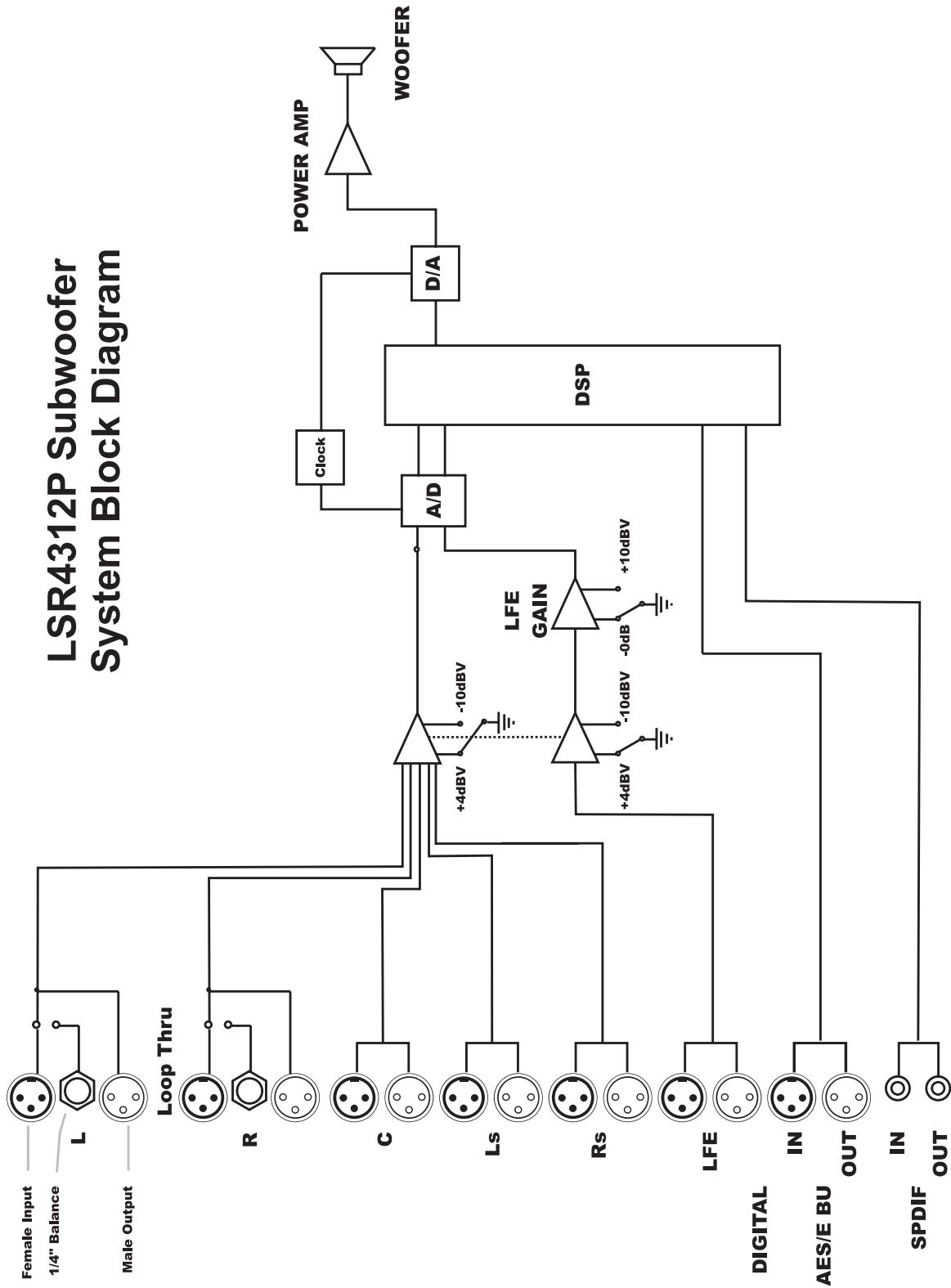
**LSR4312P Subwoofer
Signal Processor Overview**
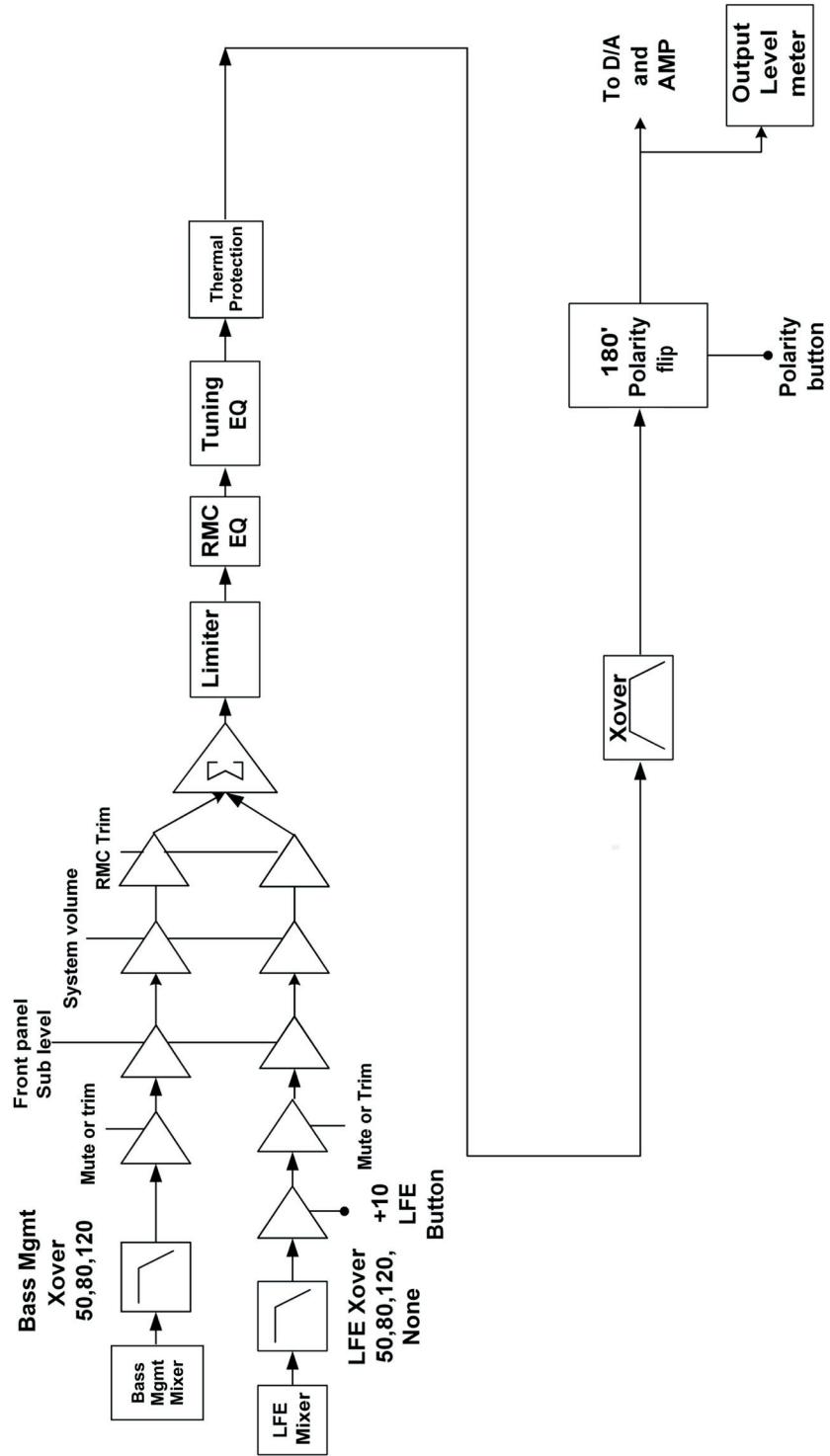
Appendix E: Wiring Requirements

Analog Connections

For optimum performance, some attention to wiring details now can reduce system degradation later. The cabling recommendations given below follow standard wiring practice for differential inputs.
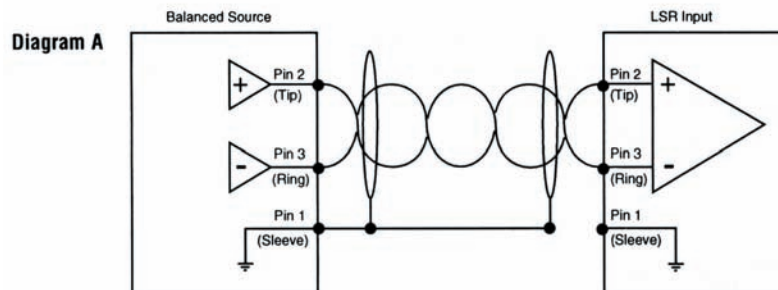
Balanced Sources

The best way to run your system is balanced, where both "HOT" (+) and "COLD" (-) signals are supplied from the source along with a GROUND/SHIELD. These are typically carried on two conductor shielded cables with XLR connectors on both ends.

Alternatively, connectors with Tip, Ring and Sleeve (T/R/S) jacks can be used. Whenever possible, the cable shield should not be connected to any signal pin, but left to perform a cable shielding function only.

◀ Under no circumstances should the safety ground wire be removed from the AC power connector.

When using balanced sources with the LSR4312SP, either the XLR or T/R/S input connector can be used, since the circuit is common to both.

For balanced signals, the HOT (+) signal from your source should be connected to the tip of the T/R/S connector or Pin 2 of the XLR input as shown in Diagram A. The "COLD" (-) signal should be connected to Pin 3 of the XLR or the "Ring" of the T/R/S connector. To avoid ground loops, connect the SHIELD at the source end but not at the LSR input.

Unbalanced Sources

When using unbalanced sources, there are more possibilities to introduce ground loops into a system. The LSR4312SP offer several ways to help alleviate potential problems with unbalanced equipment.
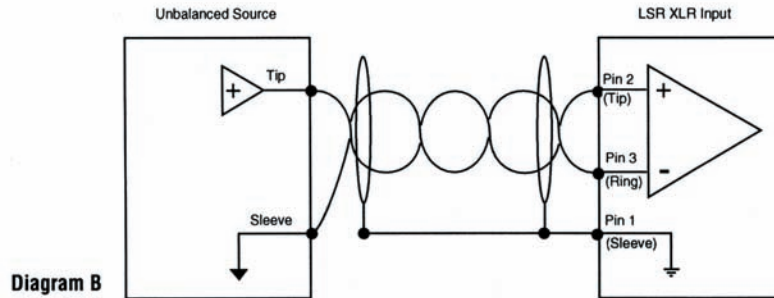
Diagram B

While there are only HOT and GROUND/SHIELD connections from unbalanced sources, it is recommended that high quality twisted pair cable be used. Diagram B shows an unbalanced source connected to the balanced XLR input of the LSR subwoofer using twisted pair cable. Note that the shield is connected to the GROUND/SHIELD connector at the LSR input, but not at the source. This reduces the likelihood of introducing a ground loop into the system.

When using unbalanced signals with an LSR4312SP, we recommend using 1/4" Tip/Ring/Sleeve connections. As shown in Diagram C, when using the 1/4" Tip/Ring/Sleeve or XLR connection, the GROUND should be tied to the source -- not the sleeve -- of the subwoofer input for optimum performance.
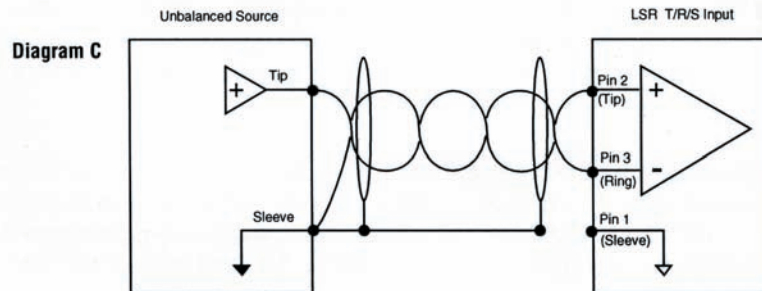

Diagram C

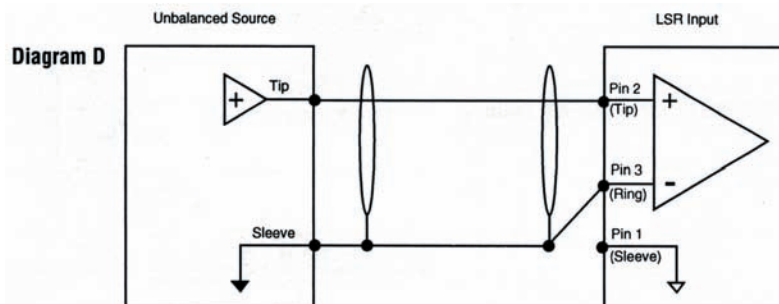Diagram D details the connections using single conductor shielded cable with a Tip/Ring/Sleeve or XLR plug for the LSR4312SP input. Single conductor cable should be used as a last resort as it provides the greatest likelihood of problems. The "HOT" (+) signal should be connected to the tip of the Tip/Ring/Sleeve plug. The GROUND should be attached to the Ring of the Tip/Ring/Sleeve plug at the LSR4312SP input.

Diagram D

Diagram E details the connections using unbalanced cable and Tip/Sleeve connections to the 1/4" or XLR input.
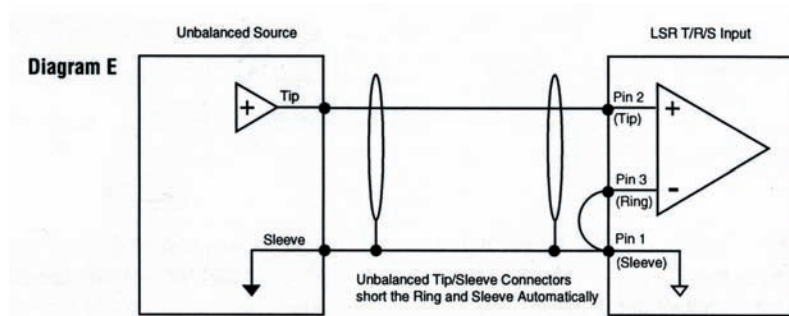
Digital Audio Connections

Always use high-quality cable designed for use with digital equipment.

We recommend the use of 110 ohm balanced cabling for AES/EBU connections, with a maximum cable length of 100 meters (approximately 330 feet). 75 ohm cabling should be used for S/PDIF connections, with a maximum cable length of 10 meters (approximately 33 feet).

Appendix F: Error Messages and Troubleshooting

Under certain circumstances, the meter display on the LSR4312SP will indicate an "error message." Following is a list of conditions that cause an error message to be displayed, and the corrective action required to cancel the error message.

LIST OF ERROR MESSAGES:

Error	Cause	Display Looks Like	Remedy
No Mic Found	Mic is not connected during RMC calibration.	RMC button blinks and the meter lights sequentially from right to left.	Press RMC to exit RMC. Connect mic to networked "LEFT" LSR4328 / 4326P and press and hold to calibrate.
Subwoofer ID Error	Improper DIP switch setting: rear panel DIP switches 1 and 2 both set to off, or two subwoofers have same ID setting.	All front panel buttons blink and the meter shows 5 segments moving back and forth.	Correct DIP switch settings.
Sync Signal Error	No digital signal found or loss of sync signal when the S/PDIF or AES/EBU digital input is selected.	INPUT button blinks and the first meter LED flashes to show muted state.	Confirm digital signal is connected.
MUTE	A subwoofer that is muted indicates mute is active. Subwoofer may be muted by pressing individual or system Mute button in LSR4300 Control Center software, or by activating SOLO on another networked speaker or subwoofer.	First meter LED blinks. No other meter segments are active.	Un-mute individual speaker or system mute, exit SOLO on other speakers.
Reset	Non-standard DIP switch configuration used to restore factory settings. This mode is entered by setting all DIP switches ON and re-powering the subwoofer.	All front panel buttons and meter segments flash rapidly to indicate reset.	Reset DIP switches correctly and re-power.
Digital A/B Channel Selection Error	S/PDIF or AES/EBU input is selected but DIP switches 3 snd/or 4 are not set properly.	Two groups of LEDs illuminate fanning out from center (-15) and return to center.	Select "Activate" DIP switch 3, 4 or both.
"Brown Out" Condition	Supply voltage level drops below required voltage.	The following rear panel LEDs illuminate- "Analog", "AES/EBU", "CHB"	Disconnect and reconnect power cord. Frequent occurrance indicates inadequate supply voltage. This should be corrected with the application of an exterior power conditioning device.
2 networked subwoofers w/ mismatched settings	LFE/Bass Mgmt DIP switches are set differently and S/PDIF or AES/EBU input is selected		Ensure LFE/Bass Mgmt DIP switch on SUB 1 and SUB 2 have same setting.
RMC-Timeout	RMC process fails to complete.	Bass Mgmt On button blinks and the meter lights sequentially from right to left.	Cycle power button Off then On. Repeat RMC process. If this doesn't work, perform factory reset and repeat RMC calibration process.
RMC State	RMC process fails to complete	RMC and SOLO buttons blink and the meter lights sequentially from right to left.	Cycle power button Off then On. Repeat RMC process. If this doesn't work, perform factory reset and repeat RMC calibration process.

Appendix F: Error Messages and Troubleshooting

Following is a list of common easily remedied issues. Consult this list if you are having any difficulties operating your subwoofer.

TROUBLESHOOTING LIST

Condition	Cause	Remedy
Erratic network operation	Lack of network terminators.	Install terminators in first and last connected speaker or subwoofer
Volume setting seems low and Power logo is flashing	DIM button on Remote Control is activated.	Press DIM button on remote control to restore full volume. Caution: To prevent sudden jump in volume, lower the system volume setting prior to deactivating DIM control.
No Meter Display	Brightness control is turned down.	Use the brightness control or hold +/- to enter the brightness mode, and push + until you have the brightness level you like.
The subwoofer will not output any audio, and the SOLO button is illuminated.	A SP networked speaker is in Solo mode.	In a networked system, press SOLO on the speakers or subwoofers that have their SOLO button blinking. If your system is no longer networked and the subwoofer is still muted, do a hard reset by powering down and powering up again.
I just finished connecting my system, but there is no audio.	Input selection is not set to match input source.	Make sure your input selection matches the inputs you are using (Analog, S/PDIF, AES/EBU).
I selected my digital input, but the audio keeps dropping out.	Poor connection, defective cable, or source is unstable.	Check connections and cables. Confirm you are using suitable cable of proper impedance. If cables and connections are OK, source may be unstable.
I am having trouble daisy-chaining my digital audio through multiple speakers.	Cable may not be suitable for digital application.	Make sure you are using cables per the S/PDIF and AES/EBU specification, as described on page 44 in this manual.
My remote control doesn't work all of the time.	Batteries weak. Remote not pointed at the Front Left speaker. (Remote will not work with LSR4312SP alone.)	Make sure remote is pointed at the Front Left LSR4328P / 4326P (the speaker with LEFT DIP switch in the ON position).
My subwoofer will not power up. There are no lights at all anywhere on the subwoofer.	Subwoofer is not connected to power source.	Confirm your subwoofer is connected to an active power source. If speaker fails to power-up, please call JBL Customer Service
Upon boot-up, LSR4300 Control Center Software does not "recognize" connected speakers or subwoofers.	USB connection and/or CAT5 Network cables not properly connected. Missing terminator.	Check all network connections to make sure the CAT5 cable is inserted all the way into each jack. Make sure you have two network terminators installed in your system so that all RJ485 jacks are in use. Confirm the USB cable from your computer is connected to the front left speaker (the speaker with LEFT DIP switch in the ON position).
"Brown Out" Condition	Voltage supply drops below the required voltage	Disconnect and reconnect power cord. Frequent occurrance indicates inadequate supply voltage. This should be corrected with the application of an external power conditioning device.
Some features do not work correctly when used with LSR4326P or LSR4328P	Firmware Incompatibility	Refer to Appendix G: Important Information About LSR4300 Firmware" on page 47.

# Appendix G: Important Information About LSR4300 Firmware

The LSR4312SP Subwoofer has Firmware Version 2.0 or later installed. If you plan to use the LSR4312SP with an existing LSR4328P or LSR4326P Studio Monitor, the firmware in the LSR4328P and LSR4326P Studio Monitor must be compatible. LSR4300 Studio Monitors produced prior to September 2006 have Firmware version 1.1 installed. LSR4300 Studio Monitors produced after September 2006 have firmware version 2.0 or later installed. The enclosed CD ROM includes the required files and procedure to update the firmware in your LSR4300 speakers to version 2.0 or later.

To determine if the firmware in associated LSR4300 speakers require an update, determine the firmware version currently installed in each speaker using this procedure:
o   Remove the power cord from the loudspeaker.
o   Reconnect the power cord to the loudspeaker.
o   Following a brief (2 second) start-up sequence, the front panel display will freeze for approximately 5 seconds with all button LEDs illuminated and the firmware version displayed on the level meter. The firmware version should be read as follows:
   o   The number of green LEDs to the left of the -15dB mark indicate the 1's digit of the firmware version.
   o   The number of yellow LEDs to the right of the -15 dB mark indicate the 1/10ths digit of the firmware version.
   o   For example. Firmware v1.1 will be displayed as follows:
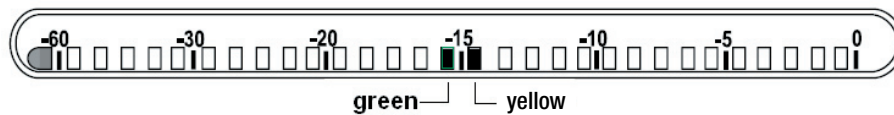
   o   Firmware v2.0 will be displayed as follows:
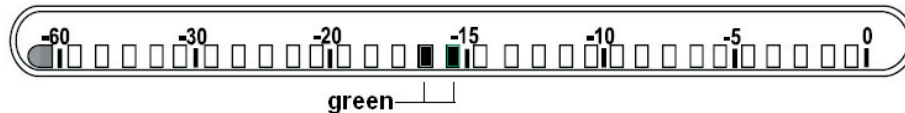
If your Studio Monitors have firmware version 1.1 installed, use the enclosed CD ROM to update each Studio Monitor to version 2.0 or later. Before proceeding, read the READ-ME file on the CD ROM. Copy the contents of the CD to a Macintosh computer with OS10.3 operating system (or later) or a PC with Windows 2000, XP operating system (or later) . Click on the Flash Update application for Mac or Windows and follow the prompts.

Notes:
o   Using LSR4300 speakers with differing firmware versions is not harmful to any of the speakers. However, some features will not work correctly and system performance may be impaired.

o   It is not necessary to update the firmware in any speaker unless you plan to use it with the LSR4312SP Subwoofer and it has an incompatible firmware version. If an incorrect firmware type has been loaded, ie: if a subwoofer has been flashed with LSR4326P or LSR4328P firmware or vice versa, upon power up all LEDs of the display will flash, the LEDs to the left of -15 will be green. The LEDs to the right of the -15 mark will be red, and all of the button LEDs will flash too. To resolve this error, disconnect and reconnect the power cable to the speaker. Then perform firmware update procedure using the correct firmware type.

   If you experience any difficulties, go to www.jblpro.com/lsr for the latest information related to the firmware. Or contact:

   JBL Customer Service (Monday through Friday)
   8:00am - 5:00pmPacific Coast Time In the U.S.A.
   (800) 8JBLPRO (800.852.5776)
   www.jblproservice.com

Specifications

System		
	Frequency Response (- 6 dB):	27 Hz – 250 Hz
	Enclosure Resonance Frequency:	27 Hz
	Low Frequency Extension:	
	-3 dB:	29 Hz
	-10 dB:	24 Hz
	Bass Management Crossover ON:	Digital Crossover - Selectable: 50 Hz, 80 Hz, 120 Hz - 4th order Linkwitz-Riley
	Distortion, 96 dB SPL / 1M Low Frequency (<80 Hz)	
	2nd Harmonic:	<1.5%
	3rd Harmonic:	<1.0%
	Maximum Continuous SPL::	116 dB SPL / 1m
	Maximum Peak SPL:	125 dB SPL / 1m (40 Hz - 80 Hz)
	Low Frequency Model:	432G
	Diameter:	300 mm (12 in.)
	Voice Coil:	65 mm (2.5 in)
	Magnet Type:	Neodymium self-shielded
	Cone Type:	Polymer coated paper fiber
	Impedance:	2 ohms
Amplifier		
	Topology:	Linear
	Sine Wave Power Rating:	450 watts (<1% THD into rated impedance)
	THD + N, ½ Power:	<0.08%
	AC Input Voltage:	120 VAC, 60 Hz Model LSR4312SP; 230VAC, 50 Hz Model LSR4312SP/230
	AC Input Voltage Operating Range	+/- 10%
	AC Input Connector:	IEC
	Self-Generated Noise Level:	<10 dBA / 1 m tonal artifact-free noise floor using analog input
	1/8th Power Rating:	25 watts
	Full Power Rating (100 hrs. IEC pink noise, 6dB crest Factor):	200 watts
	Wattage Rating:	AC at 1/8th power IEC Pink Noise 140 watts
	Maximum Current:	AC at maximum power output (audio) 120V AC line 4.2A 230V AC line 2.1A
	System Protection	Short-term peak limit circuit in DSP prevents amplifier clipping Long-term thermal protection circuit prevents system damage caused by overheating
	Fuse Value:	8A, 250V AC Time Lag, Model LSR4312SP 4A, 250V AC Time Lag, Model LSR4312SP/230
Inputs / Outputs		
Analog	L,C,R, LS, RS, LFE Male XLR IN:	Selectable +4 dBu/-10 dBV input sensitivity; Input Impedance 10K ohms. Positive voltage applied to XLR pin 2 produces outward woofer motion
	L,C,R, LS, RS, LFE Female XLR OUT	XLR Balanced loop-through pin 2 hot
	Left, Right ¼-in tip-ring-sleeve IN:	Balanced or unbalanced, Selectable +4 dBu/-10 dBV; Input impedance 10K. Positive voltage applied to ¼" tip produces outward woofer motion
	AD Converters:	96kHz, 24 Bit, 64x Over sampling
	Calibrated Input Sensitivity, Analog XLR & ¼":	
	+4 dBu:	94 dB SPL / 1 m
	-10 dBV:	94 dB SPL / 1 m

Digital	Male XLR IN:	AES/EBU(IEC60958)	
	Female XLR OUT:	AES/EBU(IEC60958)	
	Female RCA IN:	S/PDIF , (EIAJ CP1201)	
	Female RCA OUT:	S/PDIF (EIAJ CP1201)	
	Digital Input Sample Rates:	96k Hz, 88.2 kHz, 48 kHz, 44.1 kHz, 32 kHz. Tolerance: +/- 3%	
	Digital Input Word Length:	24 Bit	
	Network Connection:	RJ45 IN, RJ45 OUT	
	Network Protocol:	Proprietary Harman HiQNet™ Protocol using RS485	
	Computer Interface for firmware update:	USB Type 1	
User Controls			
	Front Panel Controls:	Power ON, SOLO, RMC, BASS MANAGEMENT ON, BASS MANAGEMENT CROSSOVER, LFE FILTER, SUBWOOFER LEVEL, INPUT, +/- (system volume, parameter increment/decrement.	
	RMC:	Start, Bypass	
	RMC Calibration Functions:	RMC Filter: 73 Frequencies (1/24th octave centers) between 20 Hz to 160 Hz, with a variable Q from 1 (1.4 octave bandwidth) to 16 (1/11th octave bandwidth, and from 3 to 12 dB of attenuation. RMC Trim: +/- 9 dB in .25 dB increments RMC Polarity: 0 degrees, 180 degrees	
	BASS MANAGEMENT XOVER	Selectable frequencies: 50Hz, 80 Hz, 120 Hz	
	LFE FILTER	Selectable low pass frequencies: 50 Hz, 80 Hz, 120 Hz, NONE	
	INPUT Selection:	Analog (XLR / ¼") S/PDIF Channel A, Channel B, Channel A+B AES/EBU Channel A, Channel B, Channel A+B	
	SUB LEVEL Control	+/- 7.5 dB in .5 dB increments	
	+/-	Default: System Volume Control: 0 dB to ∞ dB Secondary functions: Increment/decrement value of selected function	
	Rear Panel Controls:		
		L,C,R,LS, RS Analog Input Sensitivity +4dBU/ -10dBV	
		LFE Input +10dB Gain applied to Analog and Digital Inputs	
		DIP switches: SW 1: SUB 1 ID SW 2: SUB 2 ID SW 3: Digital Input Assignment Channel A SW 4: Digital Input Assignment Channel B SW 5: Digital Input Function: LFE or Bass Management SW 6: Polarity 0 degrees or 180 degrees	
	Additional Controls accessible via LSR4300 Control Center Software:	DIM (-12 dB at full volume), System MUTE, SAVE / LOAD Configuration RMC Trim	
Display			
	Front Panel Display:	31 LED Segments for dBFS and indication of settings	
	Front Panel Meter:	-70 dBFS to 0 dBFS plus CLIP	
	Rear Panel Indicators:	5 LEDs indicate selection of Analog, S/PDIF, AES input and digital channel A or B	
Physical	Finish:	Dark graphite	
	Handles:	Two, flush mounted on sides	
	Low Frequency Vent:	Bottom ported linear dynamics aperture	
	Baffle Construction:	Injection-molded structural ABS	
	Enclosure Construction:	25 mm (1 in) MDF; 50 mm (2") MDF woofer baffle	
	Net Weight:	29.5 kg (66 lbs)	
	Dimensions (WxHxD):	406 mm x 502 mm x 489 mm (16" x 19.75" x 19.25")	

Notes:

All measurements unless otherwise stated made anechoically in a 4p environment at 2 meters, referenced to 1 meter by inverse square law.

The reference measurement microphone position is located perpendicular to the centerline of the low frequency transducer.

Acoustic loading provided by the listening room increases maximum SPL capability and low frequency bass extension as compared to stated anechoic values.

Distortion measurements performed with the input voltage necessary to produce the stated A- weighted SPL at the stated measurement distance. Distortion figures refer to the maximum distortion measured in any 1/10th octave wide band in the stated frequency range.

JBL continually engages in research related to performance improvements. New materials, production methods, and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description, but will always equal or exceed the original design specification unless otherwise stated.

Warranty Statement

Who Is Protected by This Warranty?

Your JBL Warranty protects the original owner and all subsequent owners so long as: A.) Your JBL product has been purchased in the Continental United States, Hawaii or Alaska. (This Warranty does not apply to JBL products purchased elsewhere except for purchases through military outlets. Other purchasers should contact the local JBL distributor for warranty information.); and B.) The original dated bill of sale is presented whenever warranty service is required. The JBL Limited Warranty on professional loudspeaker products (except for enclosures) remains in effect for five years from the date of the first consumer purchase. JBL amplifiers are warranted for three years from the date of original purchase. Enclosures and all other JBL products are warranted for two years from the date of original purchase.

What does the JBL Warranty cover?

Except as specified below, your JBL Warranty covers all defects in material and workmanship. The following are not covered: Damage caused by accident, misuse, abuse, product modification or neglect; damage occurring during shipment; damage resulting from failure to follow instructions contained in your Instruction Manual; damage resulting from the performance of repairs by someone not authorized by JBL; claims based upon any misrepresentations by the seller; any JBL product on which the serial number has been defaced, modified or removed.

Who Pays for What?

JBL will pay all labor and material expenses for all repairs covered by this warranty. Please be sure to save the original shipping cartons because a charge will be made if replacement cartons are requested. Payment of shipping charges is discussed in the next section of this warranty.

How to Obtain Warranty Performance?

If your JBL product ever needs service, write or telephone us at JBL Incorporated (Attn: Customer Service Department), 8500 Balboa Boulevard, PO. Box 2200, Northridge, California 91329 (800/852-5776). We may direct you to an authorized JBL Service Agency or ask you to send your unit to the factory for repair. Either way, you'll need to present the original bill of sale to establish the date of purchase.

Please do not ship your JBL product to the factory without prior authorization. If transportation of your JBL product presents any unusual difficulties, please advise us and we may make special arrangements with you. Otherwise, you are responsible for transporting your product for repair or arranging for its transportation and for payment of any initial shipping charges. However, we will pay the return shipping charges if repairs are covered by the warranty.

Limitation of Implied Warranties

ALL IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE LENGTH OF THIS WARRANTY.

EXCLUSION OF CERTAIN DAMAGES

JBL'S LIABILITY IS LIMITED TO THE REPAIR OR REPLACEMENT, AT OUR OPTION, OF ANY DEFECTIVE PRODUCT AND SHALL NOT INCLUDE INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN

IMPLIED WARRANTY LASTS AND/OR DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS AND EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS, WHICH VARY, FROM STATE TO STATE.

JBL Professional Contact Information

Mailing Address:
JBL Professional
8500 Balboa Blvd.
Northridge, CA 91329

Shipping Address:
JBL Professional
8370 Balboa Blvd., Dock D
Northridge, CA 91329

Customer Service:
Monday through Friday
8:00am - 5:00pm
Pacific Coast Time In the U.S.A.
(800) 8JBLPRO (800.852.5776)
www.jblproservice.com

On the World Wide Web:
www.jblpro.com

Product Registration:
Register your product online at www.jblpro.com/registration

Outside the USA:
Contact the JBL Professional Distributor in your area. A complete list of JBL Professional international
distributors is provided at our U.S.A.website - www.jblpro.com

En Dehors des Etats-Unis:
Contacter votre Distributeur JBL Professional. Une liste complète de nos distributeurs internationaux est
disponible sur le site web - www.jblpro.com

International:
Wenden Sie sich an Ihre örtliche JBL Professional Vertretung.
Eine vollständige Liste der internationalen JBL-Vertretungen
finden Sie auf userem Website unter www.jblpro.com

Fuera de los Estados Unidos:
Comuníquese con el distribuidor de JBL Professional de su zona. En nuestro sitio web,
www.jblpro.com, encontrará una lista completa de los distribuidores de JBL International.

H A Harman International Company

Notes

Notes