FATHOM® IWS

SA-600W Subwoofer Amplifier

Owner's Manual



JL AUDIO®

Ahead of the Curve®

IMPORTANT SAFETY INSTRUCTIONS

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.



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

1) **Read the Instructions** — All safety and operating instructions should be read before the amplifier is operated.

2) **Retain the Instructions** — The safety and operating instructions should be retained for future reference.

3) **Heed Warnings** — All warnings on the amplifier and in the operating instructions should be followed.

4) **Follow Instructions** — All operating and use instructions should be followed.

5) **Water and Moisture** — The amplifier should NOT be used near water – for example, near a bathtub, washbowl, sink, laundry tub, in a wet basement, near a swimming pool, etc.

6) **Ventilation** — The amplifier should be situated so that its location or position does not interfere with its proper ventilation. For example, the amplifier should not be situated on a bed, sofa, rug, or similar surface that may block airflow over the heatsink fins. If placing the amplifier in a "built-in" installation, ensure that airflow to the heat sinks are not impeded. Do not cover the amplifier heatsink with tablecloths, curtains, etc.

9) **Heat and Flames** — The amplifier should be situated away from heat sources such as radiators, heat registers, stoves, fireplaces, or other devices which produce heat. Do not place candles on top of or near the amplifier.

10) **Power sources** — The amplifier should only be connected to a power supply of the type described in the operating instructions or as marked on the product.

11) **Power Cord Protection** — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles and the point where they exit the amplifier.

12) Cleaning — The amplifier should be cleaned only as recommended in the operating instructions.

13) Nonuse Periods — The power cord should be unplugged from the outlet when the amplifier is left unused for long periods of time.

14) Lightning and Power Surges — We recommend that you disconnect the amplifier from the electrical outlet during electrical storms and/or recurring power interruptions to prevent damage due to power surges.

15) Object or Liquid Entry — Care should be taken so that objects do not fall into and liquids are not spilled onto the amplifier enclosure. Do not expose the amplifier to dripping or splashing from liquids. Do not place objects filled with liquids on top of, or nearby the amplifier. For example: flower vases, beverages, liquid-fueled lamps, etc.

16) Damage Requiring Service — The amplifier should be serviced by qualified service personnel when:

a. the power-supply cord or plug has been damaged
b. objects have fallen or liquid has been spilled into the amplifier
c. the amplifier has been exposed to rain
d. the amplifier does not appear to operate normally or exhibits a marked change in performance
e. the amplifier has been dropped or the cabinet has been damaged

17) Servicing — The user should not attempt to service the amplifier beyond what is described in the operating instructions. All other servicing should be referred to qualified service personnel.

18) Overloading — Do not overload wall outlets, extension cords, or outlet strips as this can result in a risk of fire or electric shock.

19) Grounding — This amplifier is supplied with a three-prong, grounded power cord. Precautions should be taken so that the grounding means of the amplifier are not defeated. Defeating the grounding prong on the power cord could increase the risk of electric shock and could result in permanent damage to the amplifier's electronics.

FCC COMPLIANCE STATEMENT

NOTE: This equipment has been tested and found to comply with the limits of Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

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INTRODUCTION

Congratulations on your purchase of a JL Audio SA-600W subwoofer amplifier. Your SA-600W has been critically engineered to deliver exceptional performance in your home theater or home audio system for many years to come.

As a company, we are intensely committed to core research into high-performance audio and amplifier technologies. JL Audio's long excursion subwoofer driver designs are widely considered as reference standards for linear behavior and high output. We have also focused our efforts to create powerful amplifier and signal-processing technologies specifically aimed at delivering exceptional low-frequency performance. The SA-600W combines these core disciplines within a compact package to deliver an unparalleled listening experience.

We sincerely thank you for your purchase and invite you to read this manual thoroughly in order to achieve the highest level of performance with your *SA-600W* subwoofer amplifier. Enjoy.

PRODUCT OVERVIEW

Engineered with powerful features and versatile functionality, the Fathom SA-600W is a state-of-the-art amplifier designed to power a top-flight subwoofer system in home theater and home audio systems.

Utilizing a precisely-engineered switching power supply, the SA-600W is capable of efficiently generating unclipped output voltages equivalent to 600 watts of RMS power, while remaining calm and stable. Managing all of the SA-600W's on-board features is an intuitively designed interface for adjusting all settings and controls with ease.

The SA-600W includes the following features:

- Intuitive interface with LCD display provides detailed control of on-board settings and functions
- Pristine, stereo audio circuit pathways used throughout
- On-board, 2-way active crossover (12/24 dB per octave), capable of supporting a conventional 2-channel audio system with a low-pass filtered subwoofer output and high-pass filtered outputs to feed the main speakers' amplifier
- Built-in, optimized equalizer curves for use with JL Audio subwoofers systems
- Fixed or variable level control options
- Selectable polarity control (0 or 180 degrees) to optimize subwoofer integration
- Programmable time delay control added to the SA-600W's subwoofer outputs and auxiliary outputs.
- E.L.F. (Extreme Low Frequency) trim applies equalizer cut or boost at 25 hertz (-12 to + 3 dB) to tailor a subwoofer's response for a particular room.
- Innovative D.A.R.O. (Digital Automatic Room Optimization) technology designed to offset poor room acoustics (requires optional JL Audio calibration microphone – sold separately)
- Three on-board equalizer bands with configurable frequency range, gain range and Q range to optimize in-room response
- Grounded or Isolated input mode options for quiet, noise-free performance
- Stereo, high-level inputs accept direct connection from receivers equipped with speaker level outputs only
- Automatic turn-on options via signal sensing or 12V trigger
- 12V input and output triggers to control additional SA-600Ws or peripheral equipment
- Front-mounted USB port and DFU button provides easy access to update firmware
- Versatile mounting options for table-top setups or rack-mount installations
- Wireless input capability when used with a JLINK™ TRX System (sold separately)

If you require assistance, we urge you to contact your authorized JL Audio retailer for expert setup advice and service.

PACKAGE CONTENTS

The SA-600W Subwoofer Amplifier is shipped from the factory with:

- Owner's Manual
- High Level Input Plug
- (2) Neutrik speakOn® Speaker Connectors (NL2FX)
- (2) Rack Mounting Ears (pre-installed)
- (4) Rubber Feet (with mounting hardware)
- (2) Alligator Clips
- IEC Power Cord (3-prong)

PLACING YOUR SUBWOOFER IN YOUR LISTENING ROOM:

Your listening room or theater is an integral part of your sound reproduction system. The physical dimensions of the room and its furnishings, materials, doors and windows play an important role in defining how your system sounds.

When you place a sound source in an enclosed rectangular space, "standing waves" are created, resulting from the relationship between the sound's wavelength and your room's dimensions. In other words, standing waves result from sound energy that is trapped in the room as it bounces back and forth between opposing walls. Standing waves in the room create acoustic peaks and dips where the sound is either louder or softer, based solely on your physical position in the room. Energy also "builds up" at the room's boundaries, creating exaggerated bass response at certain frequencies. These fundamental room resonances are called room "modes".

The moral of this mode story is to try and avoid seating positions in standing wave peak or dip regions. It is highly recommended that you place your listening chairs in areas where modal peaks and dips are moderate and do not reinforce one another. The two most obvious areas to avoid are those near the exact center of the room and those close to any of the room's walls.

Just as your listening seat can be in a peak or dip region, so can your subwoofer. When placed in a room corner, a subwoofer maximally excites the room's mode structure, creating the strongest output with the fewest dips. When the subwoofer is pulled away from a corner or wall, the room modes are excited less, which can alter the sound at your listening seat.

Be sure to experiment with both your listening seat position and subwoofer position to find the best solution. Careful experimentation usually leads to a superior sounding system. Use our setup suggestions (illustrated on the opposing page and the following pages) to get you started.

If you cannot avoid placing your sofa against the back wall or your subwoofer in a less than optimal position, all is not lost. Your SA-600W's Digital Automatic Room Optimization (D.A.R.O.) System can dramatically improve these less-than-ideal situations.

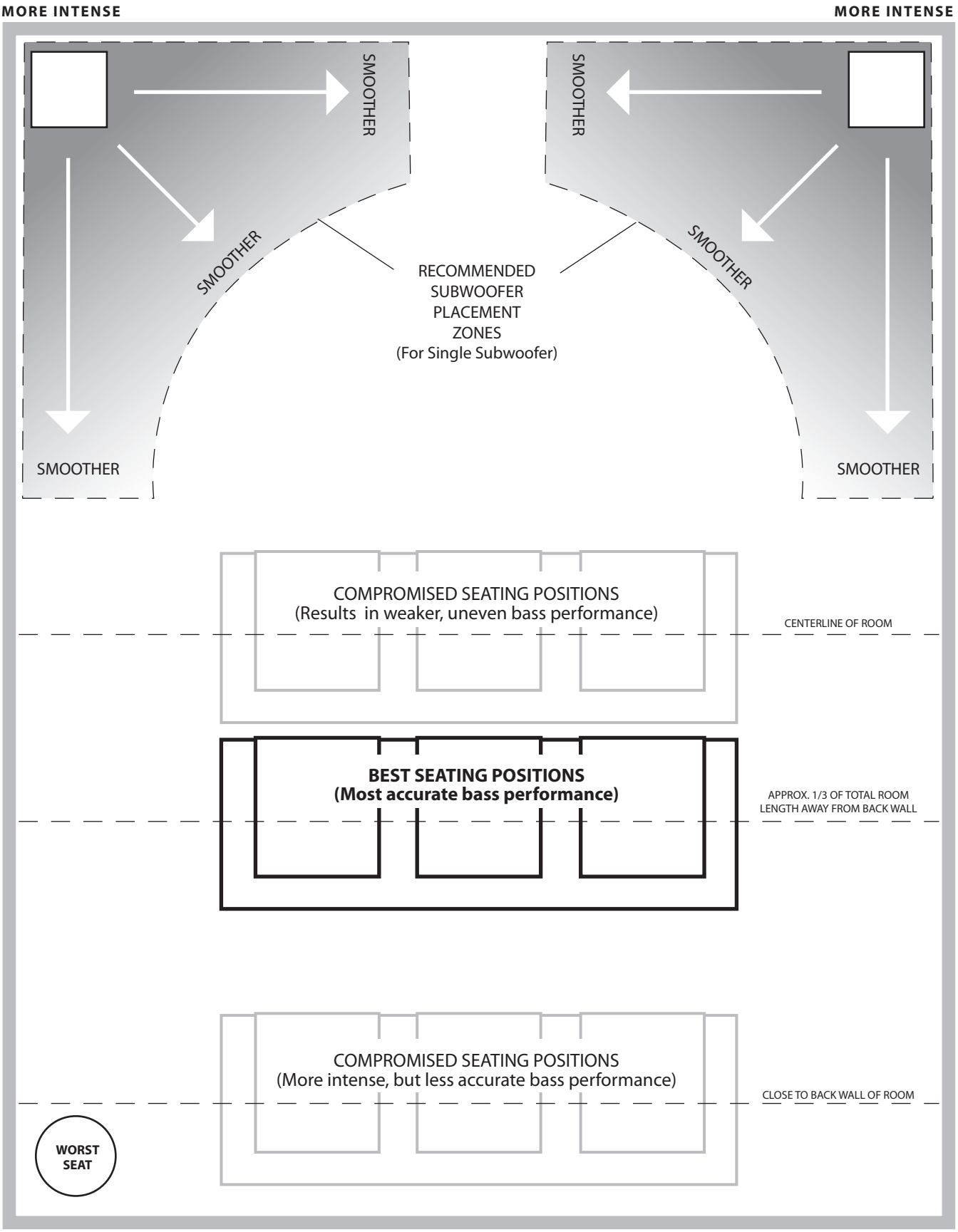
We recommend that you begin by placing your subwoofer in the front of the room, on the floor, near the front left or right speaker. Placing the subwoofer near solid walls will reinforce bass response and pulling it away from solid walls will decrease bass. Increasing the distance between the subwoofer and the walls may help to smooth upper bass response in some rooms.

We recommend that you avoid placing a subwoofer near windows to prevent rattling and sound transmission to the outside world.

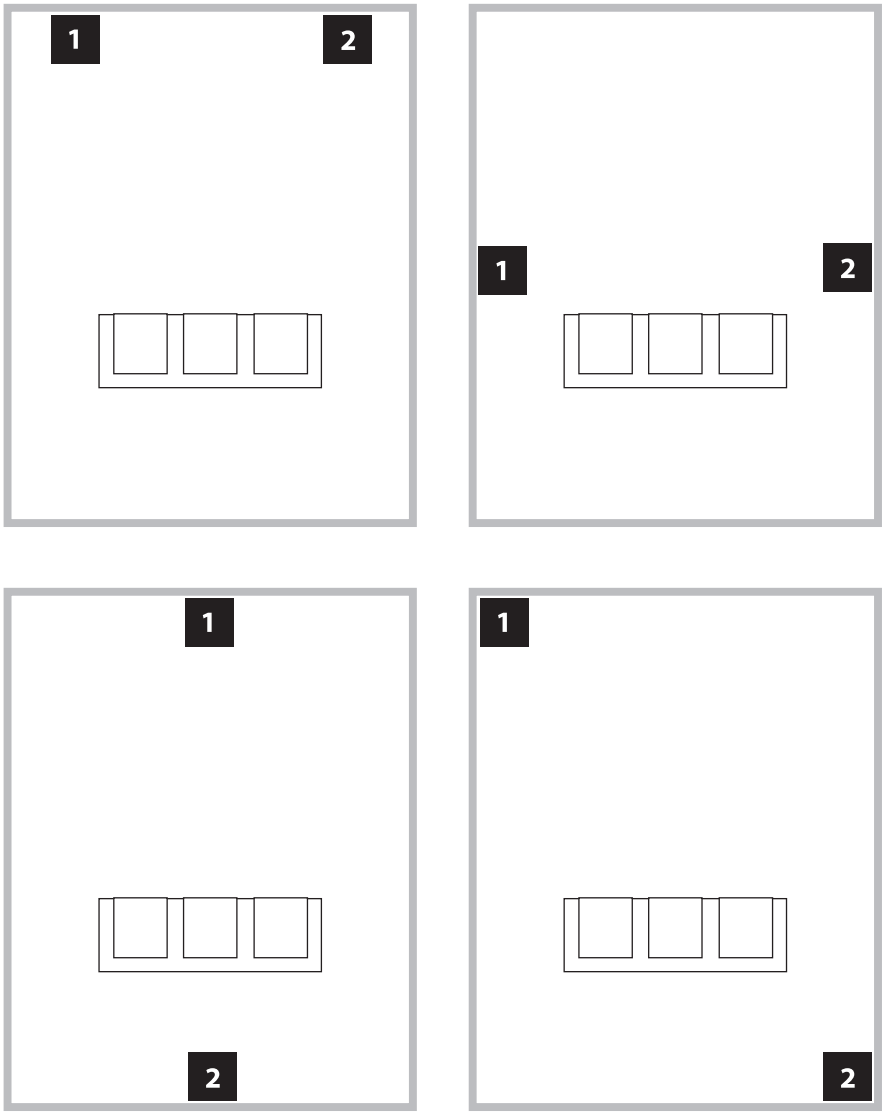


If you are planning to install your SA-600W inside a cabinet, please refer to the guidelines on page 10.

Recommended Subwoofer Placement Options for <u>One</u> Subwoofer



Recommended Subwoofer Placement Options for <u>Two</u> Subwoofers



Using Two Subwoofers

When using two subwoofers, try placement near the front corners of the room, at diagonally-opposite corners of the room, or at the center points of opposing walls as shown at right.

Experimentation with subwoofer and listener placement is recommended to achieve the best results – the benefits can be substantial.

High-resolution measurements and professional system calibration are recommended for the best possible results & system performance.

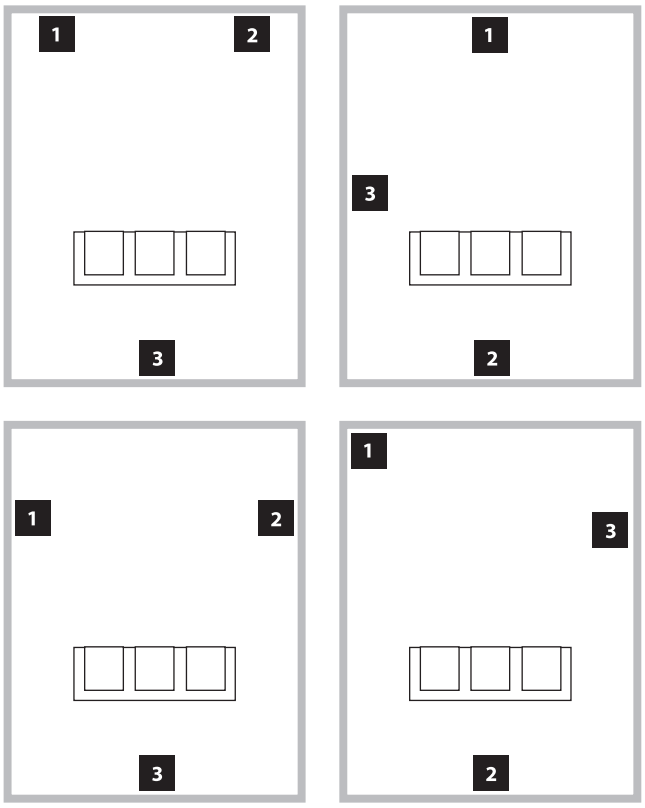
Using Three or Four Subwoofers

Research indicates that the smoothest bass response for a large listening area can be achieved using four subwoofers, placing one at the midpoint of each of the four walls (although using two or three subwoofers can be almost as good).

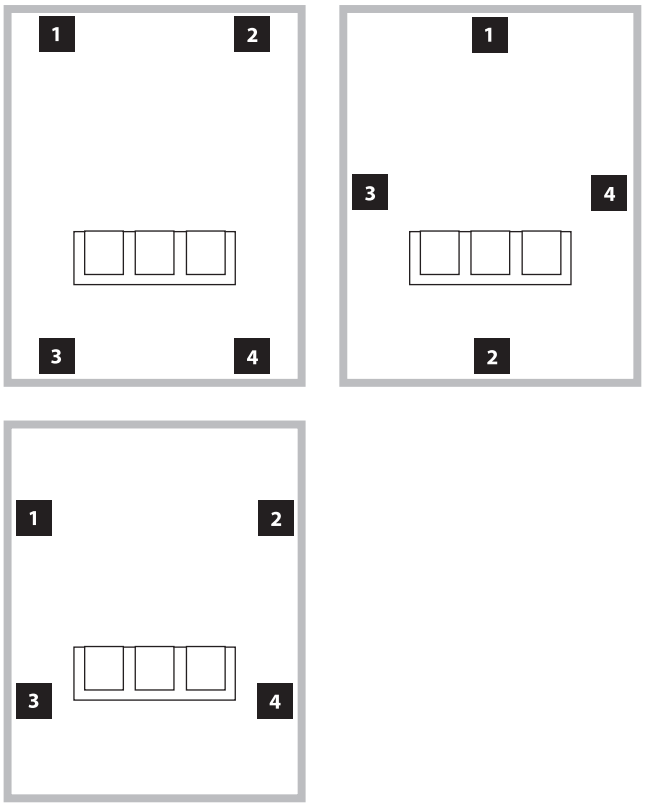
Experimentation with subwoofer and listener placement is recommended to achieve the best results – the benefits can be substantial.

High-resolution measurements and professional system calibration are recommended for the best possible results & system performance.

Recommended Subwoofer Placement Options for <u>Three</u> Subwoofers



Recommended Subwoofer Placement Options for <u>Four</u> Subwoofers



PLACEMENT CONSIDERATIONS

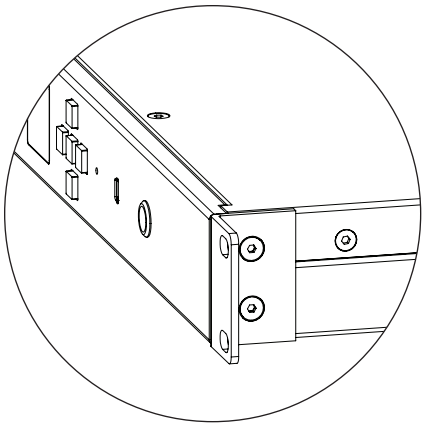
The SA-600W is designed to be "built-in" friendly. All typically needed controls are located on the front panel. An SA-600W can be easily integrated into an equipment rack or custom cabinetry by following a few simple guidelines.

1) Allow adequate open space around the SA-600W's side-mounted heatsinks for adequate cooling. Also allow space behind the amp for connector clearance.

2) While the SA-600W generally runs only warm during spirited operation, we do recommend that adequate heat vents are included in any custom cabinet which encloses the SA-600W. A pair of 3 inch (7.5 cm) diameter vents near the bottom of the cabinet and near the top of the cabinet, will allow cool air to circulate over the heatsinks of your SA-600W keeping it cool and happy.

Rack Mount: The SA-600W ships with rack ears pre-attached for installation in a standard 19-inch equipment rack.

Table-Top: The SA-600W includes rubber feet for table-top installations. Simply remove the hex screws that attach the rack ears to the SA-600W and screw the rubber feet into threaded holes in the bottom of the amplifier case. **WARNING: The rubber feet attach using M6-1.0 x 10mm screws. If lost or misplaced, only replace with the same type and length of screws. Using longer screws will cause damage to the internal circuit board.**



Rack Mount

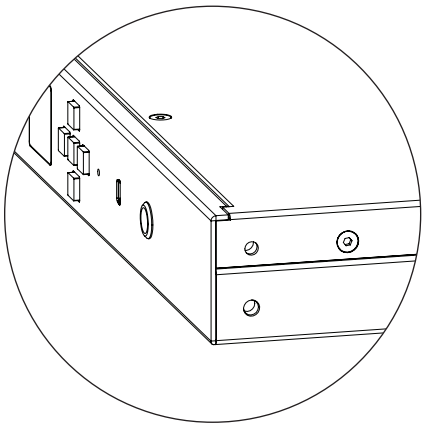
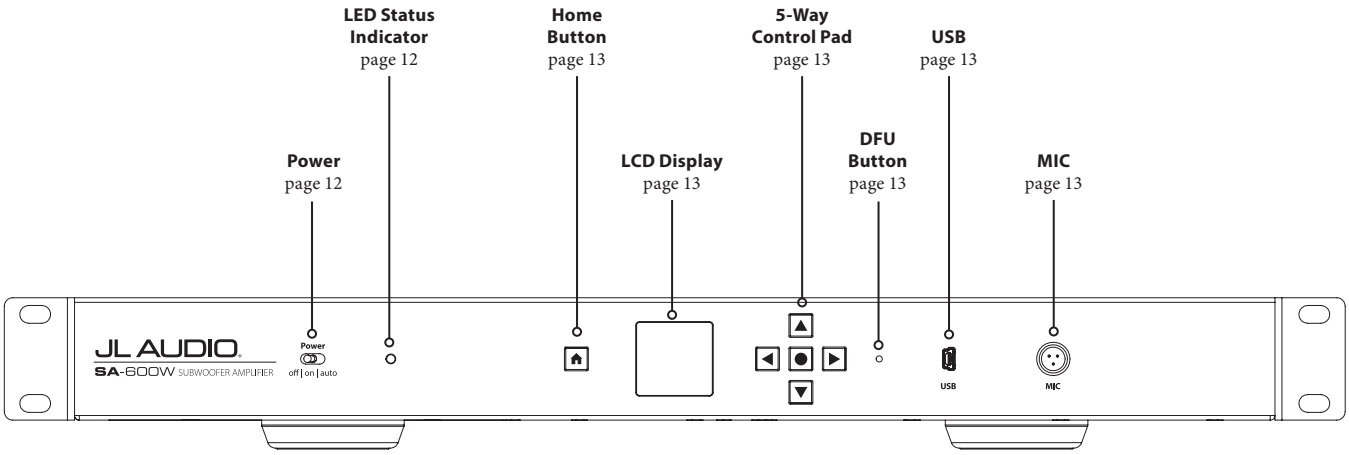
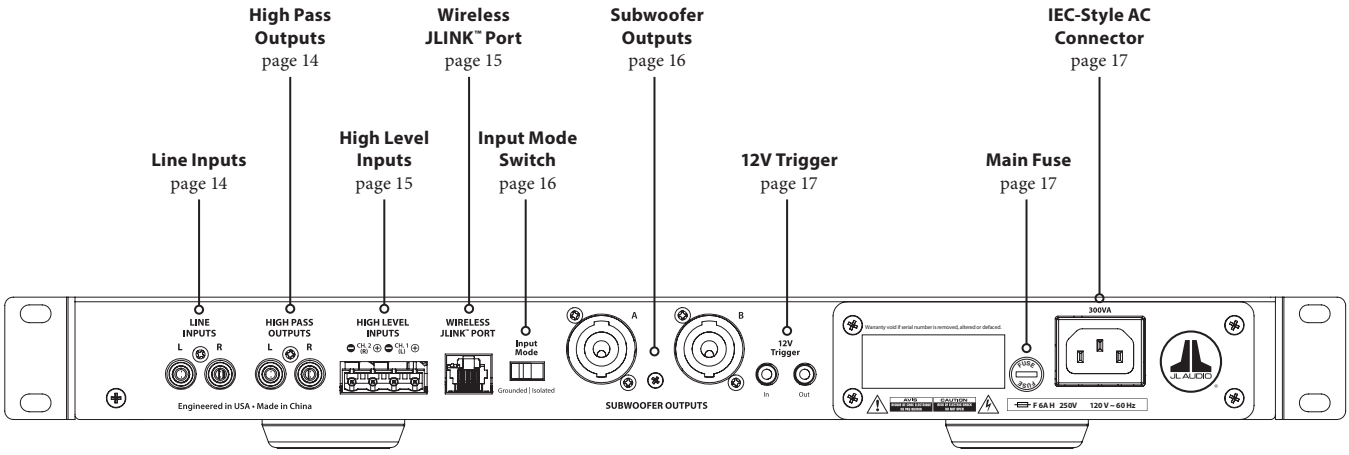


Table-Top

Front Control Panel



Rear Connector Panel



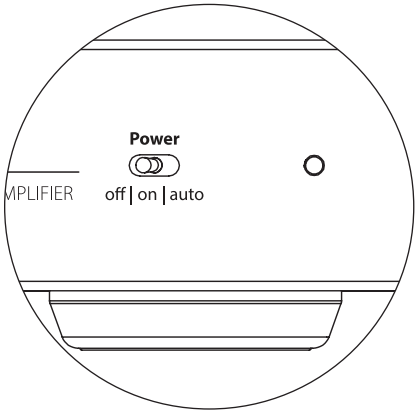
FRONT PANEL CONTROLS IN DETAIL

Power Switch

The "Power" switch determines the operational readiness of the SA-600W and should be the only method used to turn the amplifier on and off. Do not use a power strip switch, switched outlet or any other external switch as these may result in undesirable and potentially damaging transient pops. Do not unplug the SA-600W's AC power cord while the unit is turned on.



IMPORTANT



The Power switch has three positions:

"**off** ": The SA-600W is powered down. In this state, a negligible current draw will exist for operating the main power relays. The front panel LED is RED and the LCD Display is dim with the message "**In Standby. Power switch is OFF.**" displayed.

"**on**": The SA-600W is fully powered at all times. The front panel LED is GREEN and the Home Screen menu options are listed on the LCD Display.

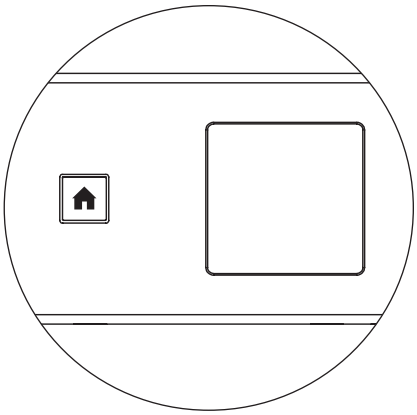
"**auto**": In this position, the SA-600W can be activated by the following methods: **Signal Sensing**: In this default mode, the SA-600W will power up when an audio signal is present at any of its inputs and will power down its internal amplifier when no signal has been detected at its inputs for sixty (60) minutes. When dormant, the SA-600W will draw a minimal amount of current (< 1 watt) to power its Signal-Sensing circuitry. The front panel LED turns YELLOW when the SA-600W powers down to indicate Standby mode and the LCD Display will show "In Standby. Waiting for audio input." The front panel LED will turn GREEN when the SA-600W powers up.

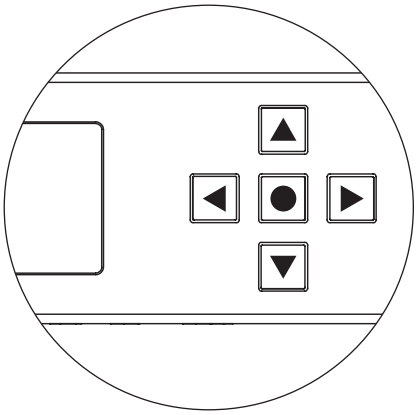
LED Status Indicator	
Color	**Mode**
Red	Off
Green	On
Yellow	Standby

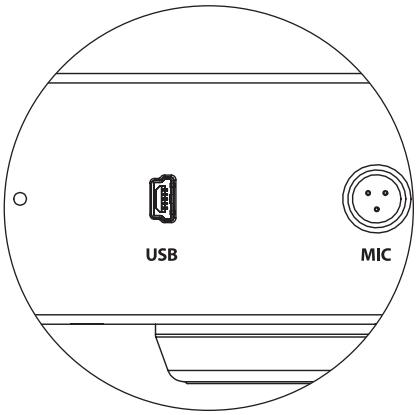
Note: In the unlikely event that the auto Signal-Sensing feature is not sensitive enough for a particular system, use a Y-adaptor cable (one female to two male RCA-type connectors) to split the incoming signal into both RCA line inputs on the SA-600W. This will increase the input sensitivity by 6 dB. Please be aware that if there is significant noise entering the inputs, the SA-600W may not turn off as desired. If this happens, remove the Y-adaptor cable and/or look for the noise source in the upstream components.

12V Trigger: Optionally, the SA-600W can be activated using a 12V DC signal. To enable this mode, select "SYSTEM" on the Home Screen screen (see page 18 for more info) and select "12V ON". This setting overrides audio Signal-Sensing and will only turn on the SA-600W when a 12V DC signal is present at its "12V Trigger - In" connection. When the 12V DC signal is removed from the "12V Trigger - In" connection, the SA-600W will enter Standby mode immediately, the front panel LED turns YELLOW and "In standby. Waiting for 12V trigger." will be shown on the LCD Display.

Note: Whenever the SA-600W is ON, its "12V Trigger - Out" output will be active, regardless of the "SYSTEM" setting. This allows you to control multiple SA-600Ws using a single 12V trigger lead by daisy-chaining them together ("12V Trigger - Out" activates the "12V Trigger - In" of the next amp, etc.).







User Interface Controls (Home Button, LCD Display and 5-Way Control Pad)

Accessed via the Home Button, LCD Display and 5-Way Control Pad, the SA-600W's electronic interface delivers simple and intuitive user control over all onboard settings and adjustments. Refer to pages 18-21 for detailed User Interface info.

USB

The front panel "USB" port (Mini-B) is used for firmware updates only. Refer to DFU BUTTON below for detailed info.

MIC

The mini-XLR jack on the front panel of the SA-600W is for connecting the optional JL Audio D.A.R.O. Calibration Microphone (sold separately). Only the official JL Audio D.A.R.O. Microphone will function properly when connected to the front-panel "MIC" jack. The D.A.R.O. Microphone Kit can be ordered separately from your JL Audio Dealer. Refer to D.A.R.O. (Digital Automatic Room Optimization) on page 20 for detailed info.

DFU Button

Located in the small hole between the 5-Way Control Pad and the USB port, the DFU button is used to activate the Device Firmware Upgrade (DFU) function.

To use, connect the SA-600W to a PC or laptop using a mini USB cable. Then, using the end of a paper clip, press and release the recessed button. All the lights will turn off and the display will be blank. Now run the JL-Updater software and follow the on-screen instructions. **Note: We recommend disconnecting the "SUBWOOFER OUTPUTS" while updating firmware.**

In case of communication failure, normal operation of the SA-600W can be recovered with a power cycle by disconnecting and reconnecting the SA-600W's AC power cord. You should then contact JL Audio's Home Technical Support Dept.

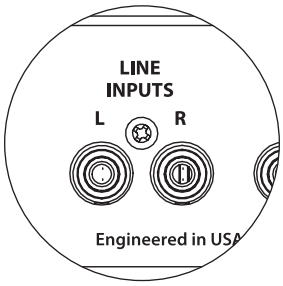
CONNECTING YOUR SA-600W

Line Inputs

The SA-600W features individual left and right unbalanced RCA-type input connectors. If you are connecting with a mono signal, use either the "L" or "R" input.

The SA-600W uses special isolation circuitry on the "LINE INPUTS" to mitigate hum and noise in your system.

For the RCA connector, the tip is positive and the sleeve is negative. The input impedance of the amplifier is 50k ohms.



High Pass Outputs

The SA-600W features individual, left and right, unbalanced RCA-type output connectors to feed a second amplifier. These outputs can be used in two distinct ways.

Crossover On: High-Pass Filtered Outputs

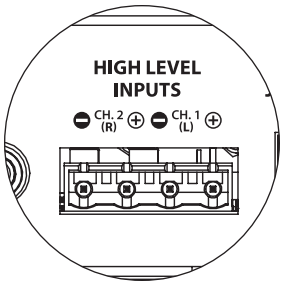
When the SA-600W's onboard crossover is engaged, the "HIGH PASS OUTPUTS" will deliver a high-pass filtered signal according to the frequency and slope (12 or 24 dB per octave) configured in its crossover (XO) settings. This output creates a true, two-way crossover between your subwoofer and main stereo speakers. By removing low frequencies from the satellites, you can create a seamless blend with your subwoofers, enhancing midrange clarity and dynamics, with improved overall system response. **This is the correct way to add a subwoofer to your stereo system.**



Note: You must supply separate left and right channel stereo inputs to the SA-600W in order to have high-pass filtered, stereo outputs from its "HIGH PASS OUTPUTS". If you supply only one channel of input to the SA-600W, only the line output corresponding to the input with signal will deliver a high-pass filtered signal (the other line output will have no signal). If you are using two SA-600Ws in a two-channel system, you can assign one SA-600W to the left stereo channel and the other SA-600W to the right stereo channel, using only one "LINE INPUT" and one "HIGH PASS OUTPUT" per SA-600W.

Crossover Off: Pass-Through Outputs

When the SA-600W's onboard crossover is defeated, the "HIGH PASS OUTPUTS" will deliver a pass-through, buffered signal that is identical to the signal feeding the SA-600W's "LINE INPUTS". This is useful to feed other equipment located nearby and most often used in Home Theater systems where Bass Management is provided by the receiver or preamp/processor.



High level inputs

This feature is included for convenience when needing to connect the SA-600W to a receiver that only offers speaker level outputs. It is not the preferred method when a line-level signal is available.

To use this feature, simply connect the full-range speaker outputs of your receiver to the "HIGH LEVEL INPUTS" plug of the SA-600W, in parallel with the main speakers. In this application, the main speakers will remain full-range and their sound will not be affected by the connection to the SA-600W.

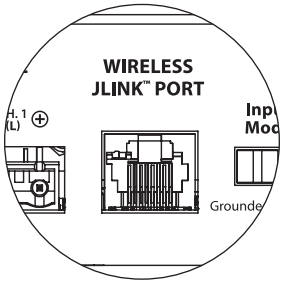
The "HIGH LEVEL INPUTS" consists of an input connector and removable plug with captured-wire receptacles. Standard speaker cable, up to 12 AWG (3 mm^2), can be used and connected to the removable plug by backing out each set screw, inserting the bare end of each speaker wire, taking care not to short any wire to another, and tightening the set screw. **Note: The mating connector is keyed to fit the input jack in one direction only.**

"HIGH LEVEL INPUTS" connector (from left to right):

1. (-) Right Channel Negative
2. (+) Right Channel Positive
3. (-) Left Channel Negative
4. (+) Left Channel Positive

Input Impedance: 4.4 kΩ

Note: It is vital to observe correct electrical polarity of each channel's input signal. Failure to do so can result in no output, loss of signal and poor performance.



Wireless JLINK™ Port

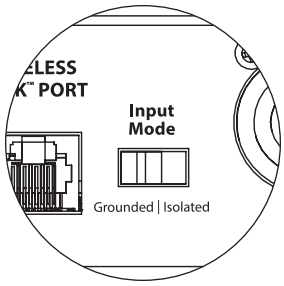
Your SA-600W includes a "WIRELESS JLINK™ PORT" receptacle that can be used with a JL Audio JLINK™ TRX system (sold separately). The JLINK™ TRX is a high-fidelity audio transmitter & receiver system, capable of wirelessly sending audio signals up to 100 feet away (30 meters). Using a JLINK™ TRX will eliminate the need to run physical signal cables from your receiver or preamp/processor's line-level outputs to the line-level inputs of your SA-600W. Instead, the SA-600W will wirelessly receive audio signals into its "WIRELESS JLINK™ PORT" directly from the JLINK™ receiver's cable connection.

Note: Use of the JLINK™ TRX system requires line-level outputs from your receiver or preamp/processor. Speaker level outputs are not compatible.

Input Mode

This feature is included to address signal grounding issues often encountered in home theater systems when several components from different manufacturers are interconnected. The Input Mode switch on the rear connection panel alters only the "LINE INPUTS" and is designed to facilitate a quiet, hum-free connection to your audio or home theater system. This switch has no effect on signals connected to the "HIGH LEVEL INPUTS".

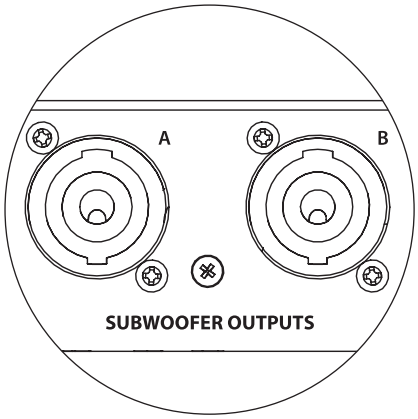
The SA-600W ships with this switch in the "Isolated" position. If, with all system components connected and turned on (but no source material playing), you hear a continuous low-frequency hum through your SA-600W, move this switch to the "Grounded" position and evaluate the difference in the noise level. Use whichever switch position provides the least hum or noise. Note: If you change equipment or add equipment to your audio system, you may need to revisit the "Input Mode" switch setting to achieve the quietest signal path.



Subwoofer Outputs

The SA-600W is equipped with a pair of Neutrik speakOn® jacks for speaker connections. Both jacks (labeled A & B) are configured for 2 wire termination (speaker + & speaker –) and are connected in parallel, inside the SA-600W, so you can use either output when connecting a single subwoofer.

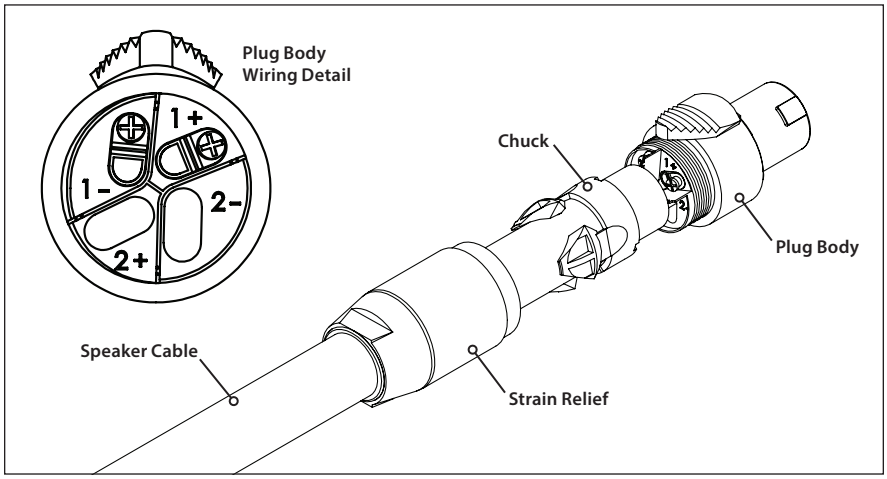
A pair of removable Neutrik speakOn® plugs (NL2FX) are supplied with the SA-600W for making high-integrity connections. Each plug is keyed for insertion in the rear "SUBWOOFER OUTPUT" jacks in one direction only. Once inserted, rotate the plug 1/8 turn clockwise to lock in place. To disconnect, slide the thumb latch back and rotate the plug 1/8 turn counter-clockwise to remove. Receptacles in each plug accept 12 AWG to 16 AWG speaker wire. Each wire attaches to the terminals marked "1–" and "1+" (shown below).

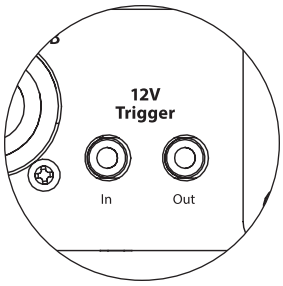


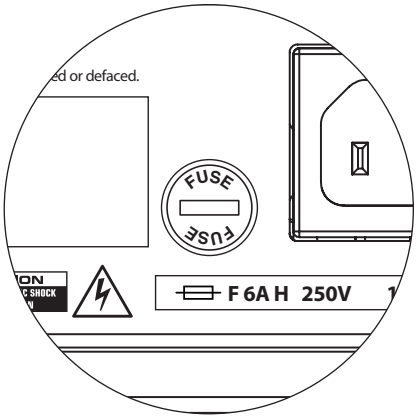
To attach wires, insert the speaker cable through the strain relief and chuck. Strip ½ inch (12 mm) of insulation from the end of each wire, then use a small Philips screwdriver to back out the set screws. Insert the bare wire into the receptacle, seating it firmly so that no bare wire is exposed. While holding each wire in place, tighten the set screw firmly, taking care not to strip the head of the screw.

Note: Use caution to ensure correct polarity and wire placement.

Slide the strain relief and chuck over the speaker cable, up to the plug body. Align the chuck with the recesses in the plug body and tighten the strain relief onto the plug body.







12V Trigger

Equipped with dual mini jacks, the SA-600W can be activated using a 12V trigger signal (Input) and turn on another component (or additional SA-600Ws) any time the SA-600W is on (Output). Both jacks accept standard 1/8-inch (3.5 mm) plugs (not supplied), with +12V connected to the "tip" conductor and Ground connected to the ring and/or sleeve conductor(s). Refer to 12V Trigger on page 12 for more info.

Main Fuse Holder

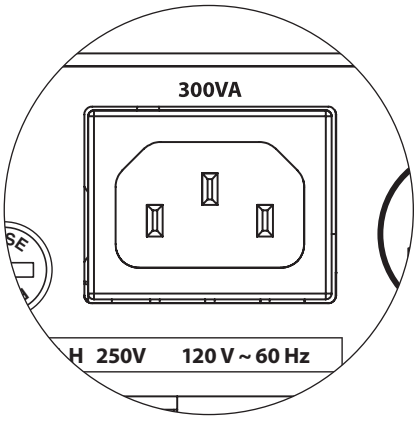
Located on the rear panel, next to the AC cord receptacle is the main fuse holder's cover. This small spring-loaded cap may be removed, allowing access to inspect or replace the main power fuse. If your AC outlet has power but the SA-600W's LED and LCD Display do not come on, the main power fuse may be blown.

To Remove - Unplug the SA-600W's AC power cord. Insert a small flathead screwdriver into the cap's slot and turn counter-clockwise slowly until the fuse holder is released. Once removed, the fuse can be inspected and, if necessary, replaced. Refer to the chart below for fuse values for your specific SA-600W model.

To Reinstall - Note that the fuse holder's body is keyed to the opening and must be aligned to fit properly. Insert the fuse holder into the opening and gently turn clockwise (about 1/8 turn) to lock in place. Pressing the cap and feeling for the spring to compress will help to locate the correct position. Reconnect the AC power cord.

If the replacement fuse blows immediately after replacing a fuse replacement, the SA-600W may require service. Please contact your Authorized JL Audio Retailer or Distributor.

Fuse Specifications		
Model	**Fuse Type**	**Fuse Size**
SA-600W (120V version)	0.25 x 1.25-inch, fast-acting	6A, 250V
SA-600W (240V version)	5mm x 20mm, fast-acting	4A, 250V



IEC-Style AC Connector

The IEC-style AC cord receptacle receives the heavy-gauge, 6 ft. (1.8 m) long, power cord included with your SA-600W. Amplifiers sold in different parts of the world are configured for each market's electrical system and include appropriate plugs on the power cords. Please note the voltage markings next to the AC Connector and make sure you are only powering the SA-600W from a receptacle that matches these markings. Do not use any AC power cord other than the one supplied with the SA-600W.

The SA-600W is a very powerful device and can draw a lot of current. If too many components are connected with a SA-600W to one electrical outlet, you risk tripping a household circuit breaker during very demanding program material. If this happens, separate the SA-600W and other components between two AC electrical circuits.

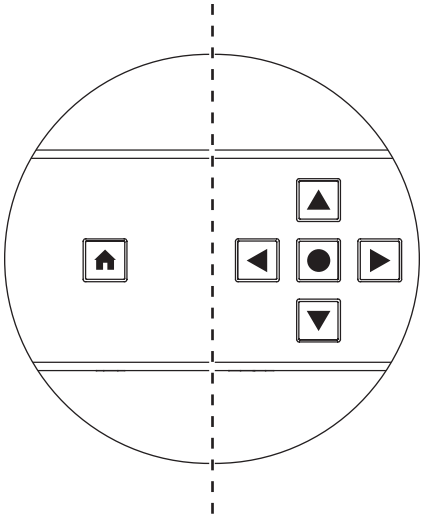
HOME SCREEN & USER INTERFACE CONTROLS

The SA-600W's electronic user interface is controlled using the Home Button, LCD Display and 5-Way Control Pad located on the front panel. Designed to be simple and intuitive to use, all onboard adjustments can be made quickly and easily, with just a few button presses.

All settings are accessed from the main Home Screen, with main menu options appearing on the display while the SA-600W is powered on. You may return to the Home Screen from any location within the interface by pressing the Home Button, (located to the left of the LCD Display) to go back one step with each press.

The 5-Way Control Pad is to the right of the LCD Display. It consists of Up, Down, Left, Right direction (arrow) keys, with a center Enter key. Generally speaking, use the arrow keys to move/highlight your selection and then press the Enter key to confirm your choice or access for further options.

Note: When settings are configured from their default state, the text of the selected item and its main level option (except SYSTEM), will turn YELLOW to indicate active mode.



USER INTERFACE IN DETAIL

SYSTEM

"SYSTEM" configures how your SA-600W is activated when the "Power" switch is set to "**auto"** and allows access to the onboard equalizer settings.

auto mode options include:
12V OFF (default)**:** Activates via Audio Signal Sensing
12V ON: Activates via "12V Trigger - In"
(see Power Switch on page 12 for detailed info)

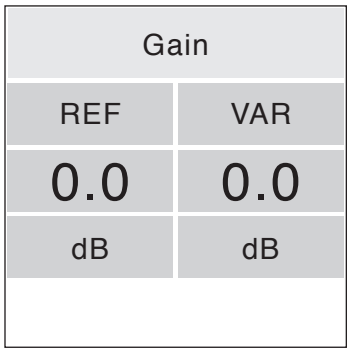
Box EQ: This feature allows you to activate a preloaded EQ curve designed to optimize the performance of a JL Audio subwoofer system. Simply select the custom equalizer setting for your specific JL Audio subwoofer and enclosure. If you are using a non-JL Audio subwoofer, you may select the "No EQ" option and use the SA-600W's 3-band EQ feature (page 21) to apply equalization, as needed.

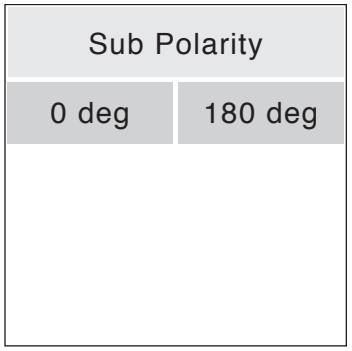
System Reset: This feature allows you to quickly return all settings back to a default state (Off/Uncalibrated). Selecting "CONFIRM RESET" will erase all saved configurations from the SA-600W's intenal memory and perform a software reset. **Note: If your SA-600W's GAIN setting was previously configured to variable (VAR), performing a System Reset will cause it to revert to its default, Reference (REF) configuration. This may result in an unexpected loud burst after the SA-600W's software reset is complete.**

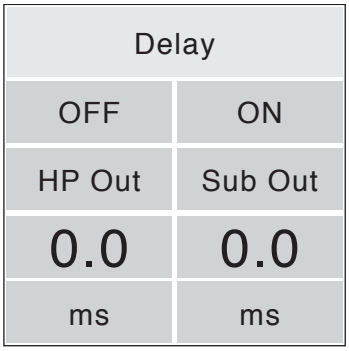
Selecting **"**SYSTEM" will also list your SA-600W's technical data at the bottom of the LCD display. This information could be relevant in case your SA-600W requires service.

HOME	
SYSTEM	ELF
GAIN	DARO
POLAR	XO
DELAY	EQ

System Settings	
12V OFF	12V ON
Box EQ	
System Reset	
V5.15	X144







GAIN

"GAIN" allows you to configure the subwoofer output level, with two options.

REF: (default) The subwoofer level is fixed at 0 dB (reference level). This setting is useful if you are controlling the subwoofer level using a receiver or preamp/processor.

VAR: The subwoofer level is variable and may be increased (+15 dB) or decreased (-50 dB) in 0.50 dB steps, using the UP and DOWN arrow keys.

POLAR

"POLAR" allows you to select between normal (0 deg) and reversed (180 deg) signal polarity and primarily affects the small frequency range around the crossover point between your subwoofer and satellite speakers. This feature produces an instantaneous reversal of the signal's amplitude peaks.

When placing your subwoofer(s) in the room, either setting may provide a smoother transition between your subwoofer(s) and satellite speakers. Use source material with good mid and upper bass content for evaluation.

0 deg: (default) Normal polarity (0 deg)

180 deg: Polarity reversed 180 degrees

DELAY

"DELAY" allows you to add time delay to either the "SUBWOOFER OUTPUTS" or to the "HIGH PASS OUTPUTS" of the SA-600W. The maximum delay available is 25 milliseconds (in 0.1 ms increments). "DELAY" mode options include:

HP Out: This control adds delay to the filtered satellite signal coming from the SA-600W's "HIGH PASS OUTPUTS" and can be very useful for helping the subwoofer-to-satellite transition through the crossover region. Note: The delay feature of the "HIGH PASS OUTPUTS" is available even if the onboard crossover (XO) is not used (OFF).

Sub Out: This delay functions similar to a Phase control, adding delay to the "SUBWOOFER OUTPUTS".

Due to the built-in system equalization used to make the small-box subwoofer's acoustic response flat, the subwoofer output signal is naturally delayed - usually on the order of 12 to 15 milliseconds. By delaying the satellite outputs by a similar amount, you can achieve greater coherence, texture and punch through the crossover region.

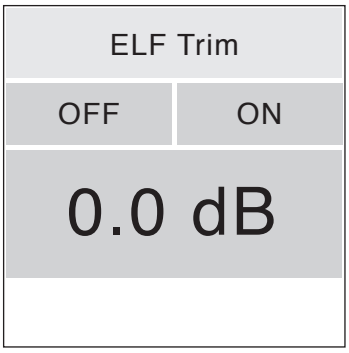
Optimum DELAY results can be achieved by first running the D.A.R.O. system to flatten the subwoofer's acoustic response in your room. Satellite delay has little audible effect if the frequency response through the crossover region is uneven.

ELF

The "ELF" (Extreme Low Frequency) function allows the user to apply signal equalization at 25 Hertz. You can cut the signal at 25 Hz by 12 dB or boost the signal at 25 Hz by 3 dB (0.5 dB increments). At 0 dB the equalizer is set flat for zero contribution to the signal. At maximum boost, the signal at 25 Hz is increased by 3 dB.

The ELF Trim feature is useful for tailoring a subwoofer system's low frequency output for your particular room. Adding some boost can make certain material more exciting. Using the cut function can help to compensate for room or boundary gain in the low frequencies. Room boundaries and the room's finite (limited) size naturally cause very low frequencies to be boosted relative to other parts of the signal. As such, using the ELF Trim feature to cut the lowest frequencies can help to tame "bloat" or unnatural sounding low bass in small to medium sized rooms (and can also reduce unwanted vibrations in the room or throughout the house).

The "ELF" function affects frequencies 2 to 3 times higher than the 25 Hz specification. This frequency tapering effect may reduce the overall output of the subwoofer and require the user to increase the "GAIN" control after adjusting the ELF Trim.



D.A.R.O.

A powerful feature of the SA-600W is the innovative Digital Automatic Room Optimization (D.A.R.O.) technology. This one-touch system serves to eliminate the largest acoustic response peaks in your home theater at the main listening seat, greatly improving the in-room low-frequency response. Calibration of the D.A.R.O. system is fully automated. Please consult the SETUP PROCEDURES section of this manual on pages 28-35 for details on how to use the D.A.R.O. system.

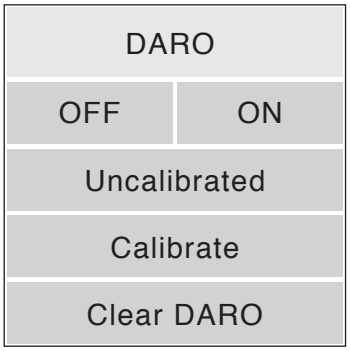
The D.A.R.O. feature can be turned ON and OFF (default) from this screen. You may also turn the D.A.R.O. feature ON and OFF even when Calibration data is not present (no room EQ exists).

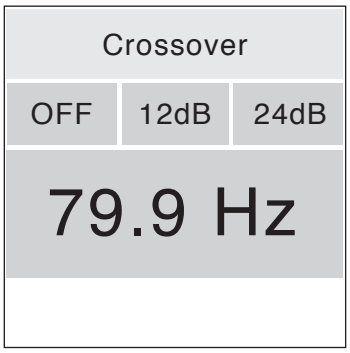
To perform a room Calibration, plug the JL Audio calibration microphone into the front-panel "MIC" jack, select the "Calibrate" option and press Enter.

If the D.A.R.O. calibration has not yet been performed, the bottom-most text on the D.A.R.O. screen will display "Uncalibrated".

Once you perform an D.A.R.O. Calibration, this text will display "Calibrated". Then at the bottom of the screen, you will have the option to "Clear DARO". Once selected, this text will change to "CONFIRM CLEAR" in RED. Once selected, the D.A.R.O. calibration data is erased and the text indicators return to their default state.

You can also elect to run a new calibration sequence without clearing the existing data. The new EQ curve is saved in place of the old one. For detailed instructions on the D.A.R.O., refer to Setup Procedures on pages 28-35.





XO

"XO" (Crossover) allows you to apply low pass and high pass filters to the SA-600W's outputs. This is most useful in a dedicated 2 channel system for proper integration of your stereo satellites and subwoofer system.

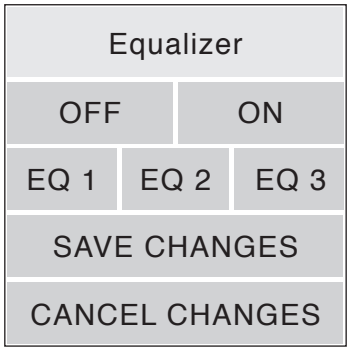
The SA-600W also features individual, left and right, unbalanced RCA-type connectors (HIGH PASS OUTPUTS) to feed a separate amplifier powering your main stereo speakers or a second SA-600W (with Crossover set to OFF.)

OFF (default): The "High-Pass Outputs" are a buffered duplicate of the input signal (full range). These outputs can be used to drive the inputs to another SA-600W or other equipment.

ON: Enables selection of either a "12 dB" or "24 dB" per octave slope for the internal filter and adjustable filter frequency (30 Hz to 130.1 Hz) using the UP and DOWN arrow keys.

Generally speaking, the steeper slope (24 dB/octave) is preferred as this allows less frequency overlap between your satellites and subwoofer. Less overlap yields less interference between the high and low frequency drivers, offering a smoother frequency response.

As a rule of thumb, start at 80 Hz (79.9 Hz on the SA-600W) and experiment from there. Avoid crossover frequencies below 60 Hz. Since you own a top-notch subwoofer system, allow it to do its job and remove the low-frequency burden from your satellites. Removing the low frequencies from your satellites will improve your system's dynamic range and clarify the satellite's mid-range performance. Higher crossover frequencies (above 120 Hz) can cause localization of the subwoofers due to high-frequency bleed through.



EQ

The "EQ" (Equalizer) section gives you 3 fully-adjustable bands of equalization to address specific in-room response problems.

OFF (default): No EQ bands are in the signal path

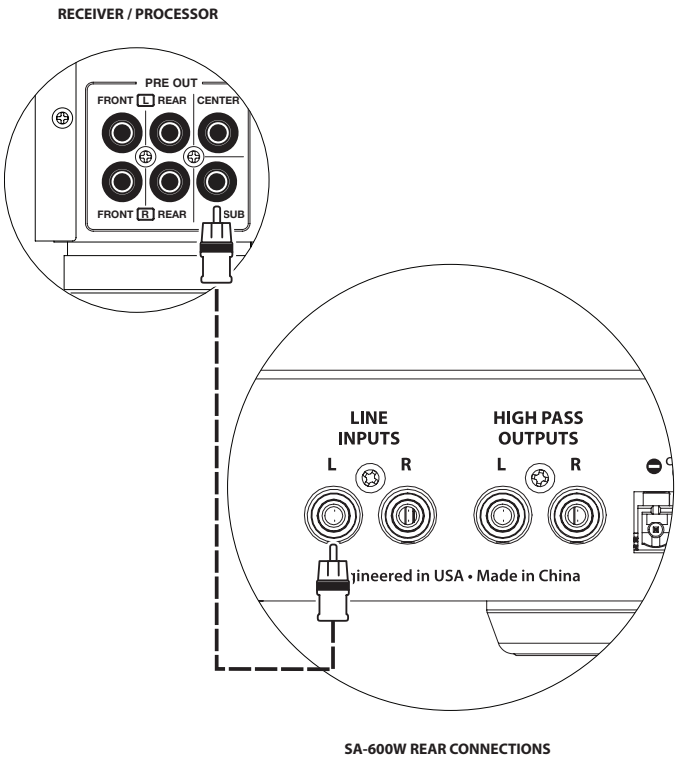
ON: Allows application of up to three EQ bands to the signal path. To make adjustments, use the UP and DOWN arrows to move between parameters, and use the LEFT and RIGHT arrows to make numerical adjustments.

Each EQ band includes the following adjustable parameter ranges:
Frequency range: 20Hz to 160Hz | **Frequency step**: 1Hz
Gain range: +/-12.0 dB | **Gain step**: 0.2dB
Q range: 0.7 to 5.0 | **Q step**: 0.1



Before exiting the "EQUALIZER" menu, select either "SAVE CHANGES" (Green) to save your adjustments, or "CANCEL CHANGES" (Red) to leave the EQs in their previous state. If you did not alter any of the EQ parameters, the "SAVE CHANGES" and "CANCEL CHANGES" buttons will remain greyed out.

Once you have saved or canceled changes, press HOME again to return to the Home screen. If you press HOME without selecting "SAVE CHANGES", your adjustments will be discarded (the same as if you pressed the "CANCEL CHANGES" button).



SA-600W REAR CONNECTIONS

SYSTEM CONNECTION DIAGRAM 1:
One SA-600W to
Home Theater Receiver or
Home Theater Preamp/Processor

Most home theater receivers and preamp/processors provide a single (mono) subwoofer output. Using RCA-type cables, connect the mono subwoofer output to the Left or Right "LINE INPUT" of your SA-600W.

Now that your equipment is connected, refer to pages 32-35 and follow the directions for RECOMMENDED HOME THEATER SETUP PROCEDURES.

WARNING! TURN OFF THE SA-600W AND ALL OTHER EQUIPMENT IN THE SYSTEM BEFORE MAKING OR CHANGING ANY CONNECTIONS!



WARNING

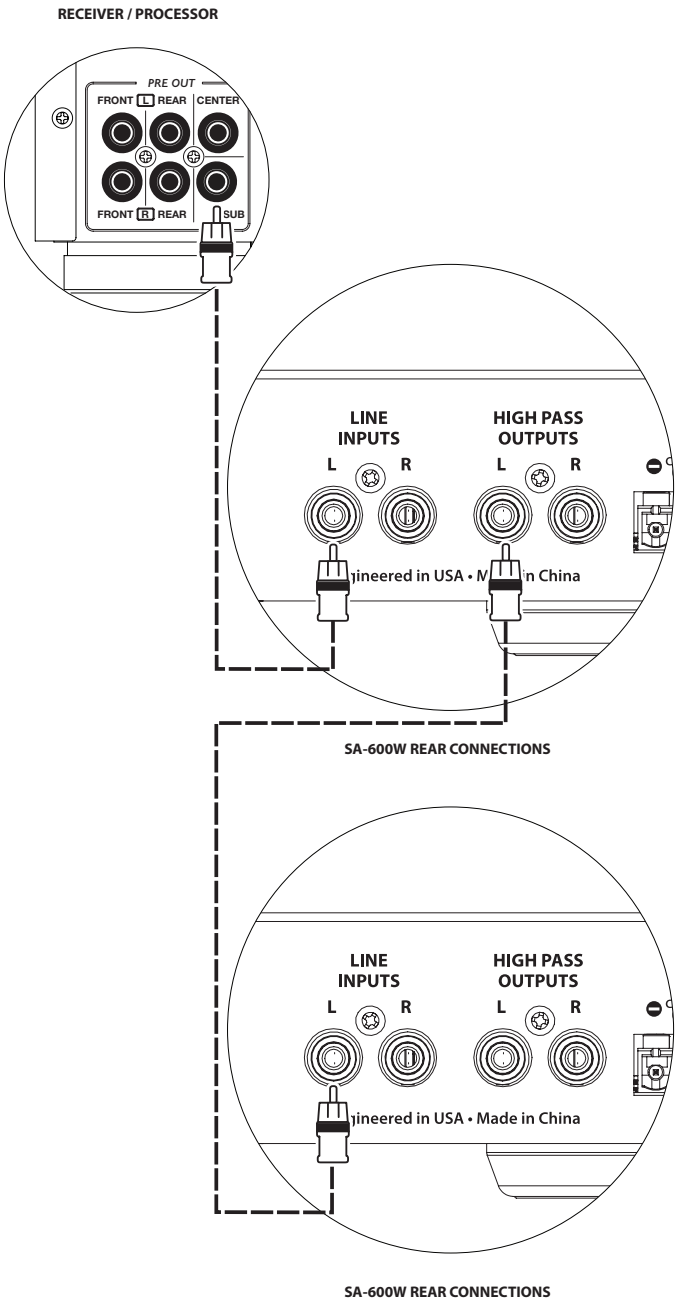
SYSTEM CONNECTION DIAGRAM 2:
Multiple SA-600Ws to
Home Theater Receiver or
Home Theater Preamp/Processor

Multiple SA-600Ws can be connected in a single home theater system when Bass Management is provided by the receiver or preamp/processor. (SA-600W crossover set to OFF.)

Most home theater receivers and preamp/processors provide a single (mono) subwoofer output. Using RCA-type cables, connect the mono subwoofer output to the Left or Right "LINE INPUT" of the first SA-600W.

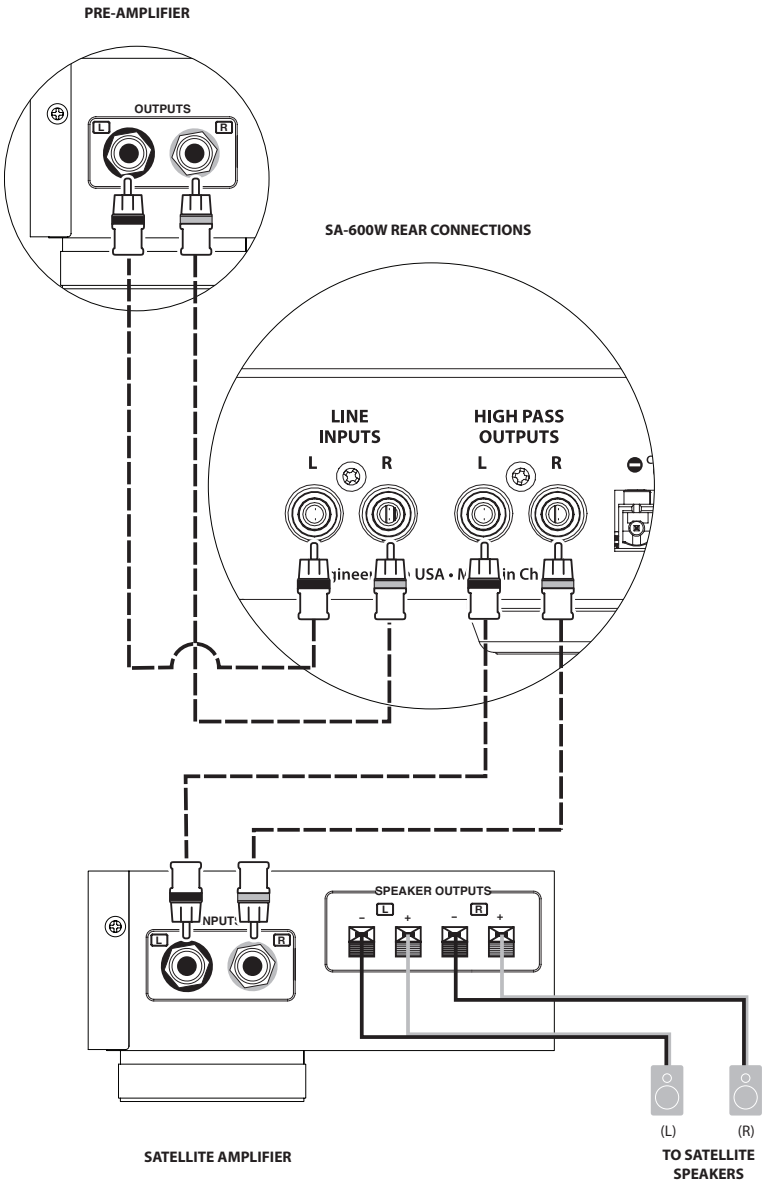
Connect the "HIGH PASS OUTPUTS" from the first SA-600W to the "LINE INPUTS" of the second SA-600W. Subsequent SA-600Ws will be connected in the same manner.

Now that your equipment is connected, refer to pages 32-35 and follow the directions for RECOMMENDED HOME THEATER SETUP PROCEDURES.



WARNING

WARNING! TURN OFF THE SA-600W(S) AND ALL OTHER EQUIPMENT IN THE SYSTEM BEFORE MAKING OR CHANGING ANY CONNECTIONS!



SYSTEM CONNECTION DIAGRAM 3: One SA-600W to Two-Channel Audio System

The SA-600W is great for use in two-channel audio systems due to its onboard high-pass crossover.

Using RCA-type cables, connect the Left and Right stereo outputs from your preamp to the "LINE INPUTS" of your SA-600W. This feeds a full-range stereo signal into the amp.

Next, connect the Left and Right "HIGH PASS OUTPUTS" from the SA-600W to the Left and Right inputs of your satellites' stereo power amplifier. This will feed a high-passed filtered signal (bass removed) to the Left and Right speakers. Removing the bass burden from your satellites will greatly enhance their performance. See the XO discussion on page 21 for additional info.

Now that your equipment is connected, refer to pages 28-31 and follow the directions for RECOMMENDED STEREO SYSTEM SETUP PROCEDURES.

WARNING! TURN OFF THE SA-600W AND ALL OTHER EQUIPMENT IN THE SYSTEM BEFORE MAKING OR CHANGING ANY CONNECTIONS!

WARNING

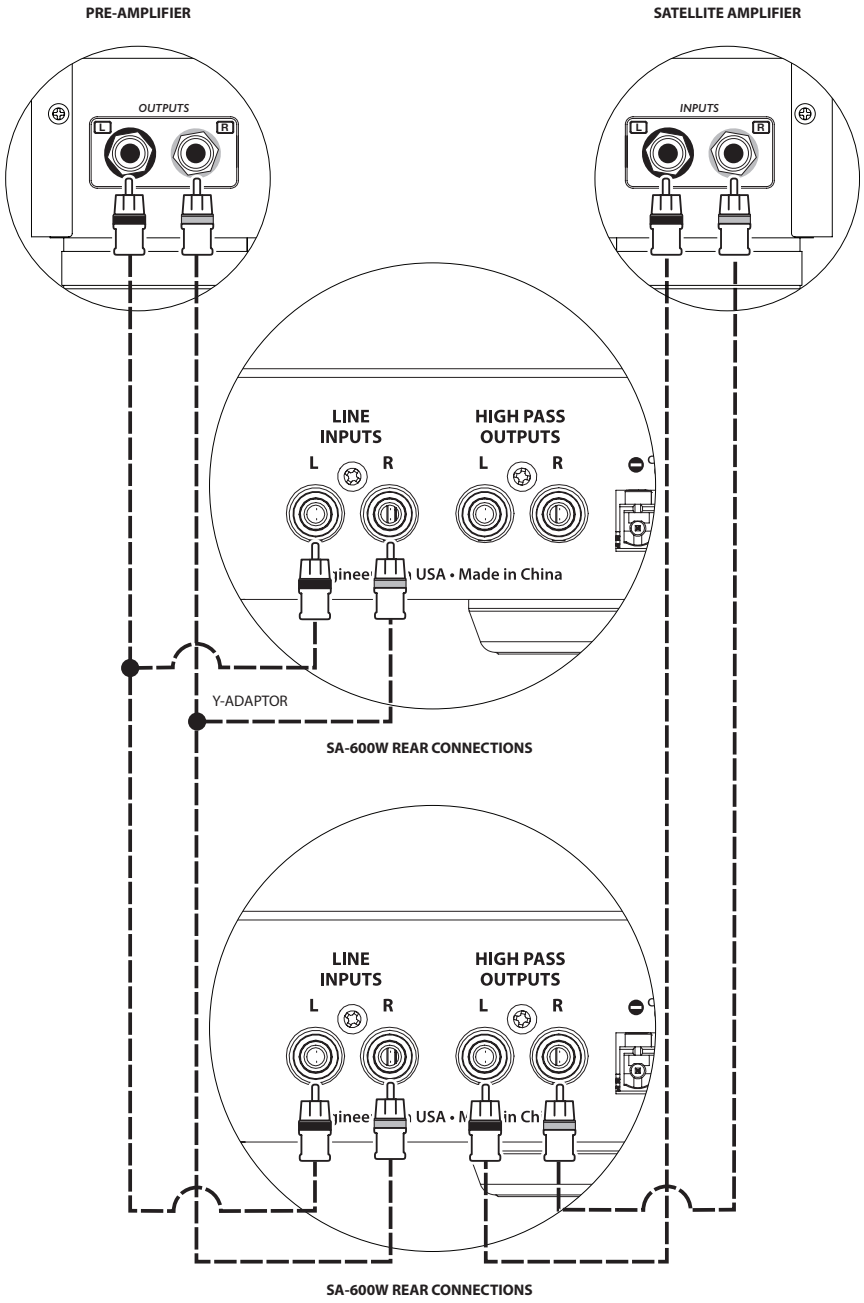
SYSTEM CONNECTION DIAGRAM 4: Two SA-600Ws to Two-Channel Audio System for Mono Bass

The SA-600W is great for use in two-channel audio systems due to its onboard high-pass crossover. Mono bass in your stereo system allows greater flexibility in subwoofer placement.

Using RCA-type cables, connect the Left and Right stereo outputs from your preamp to the Left and Right "LINE INPUTS" of BOTH SA-600Ws. This feeds a full-range stereo signal into BOTH amplifiers.

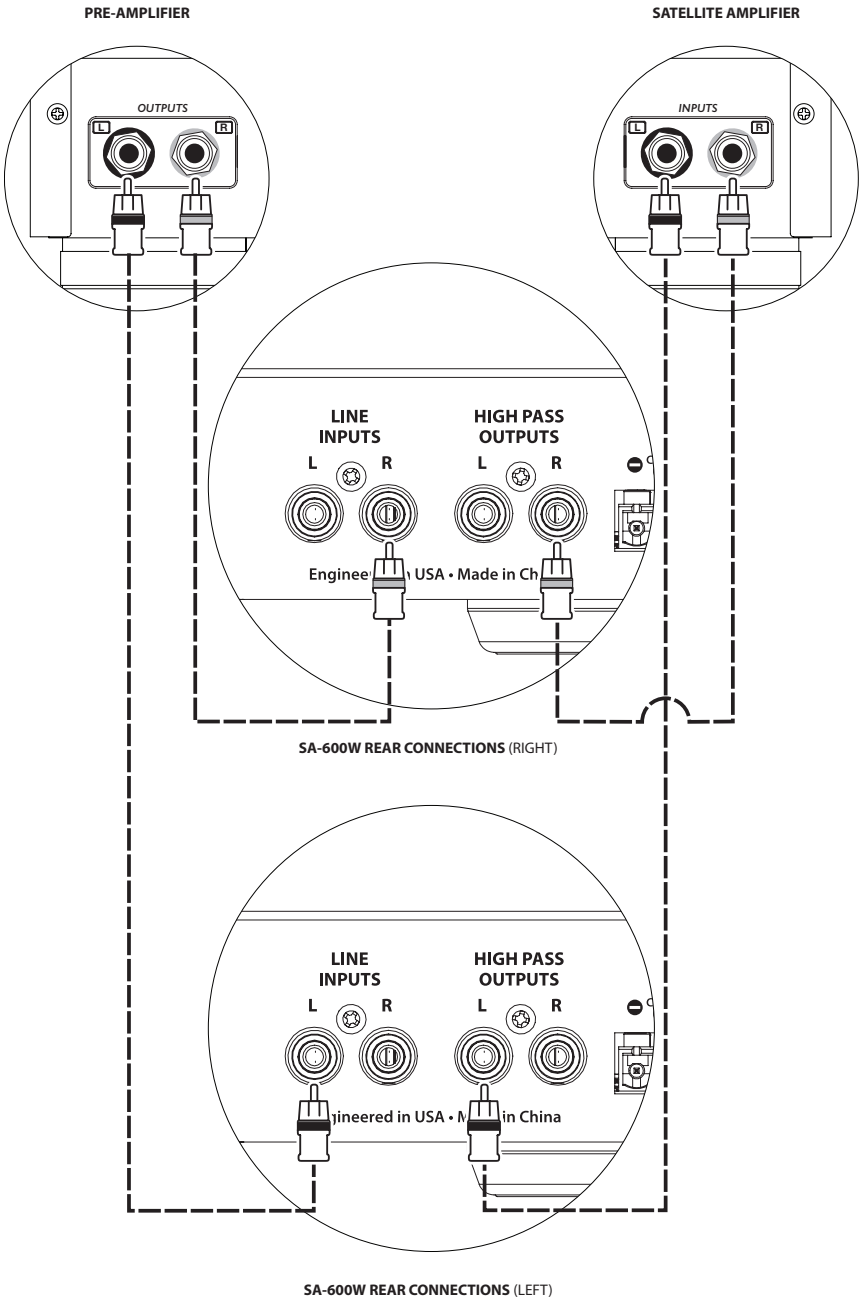
Next, connect the Left and Right "HIGH PASS OUTPUTS" from ONE SA-600W (the easiest one to physically access) to the Left and Right inputs of your satellites' stereo power amplifier. This will feed a high-passed filtered signal (bass removed) to the Left and Right speakers once the SA-600W's internal crossover (XO) is turned ON. Removing the bass burden from your satellites will greatly enhance their performance. See the XO discussion on page 21 for additional info.

Now that your equipment is connected, refer to pages 28-31 and follow the directions for RECOMMENDED STEREO SYSTEM SETUP PROCEDURES.



WARNING

WARNING! TURN OFF THE SA-600W(S) AND ALL OTHER EQUIPMENT IN THE SYSTEM BEFORE MAKING OR CHANGING ANY CONNECTIONS!



SYSTEM CONNECTION DIAGRAM 5: Two SA-600Ws to Two-Channel Audio System for Stereo Bass

The SA-600W is great for use in two-channel audio systems due to its onboard high-pass crossover. Stereo bass can greatly enhance the imaging of your system, however subwoofer placement options can be limited (but it's worth the extra effort). With stereo bass, your left and right subwoofers should be placed nearby the left and right satellites, respectively.

Using RCA-type cables, connect the Left output of your preamp to the Left "LINE INPUT" of one SA-600W and the Right output from your preamp to the Right "LINE INPUT" of the other SA-600W. This feeds a full-range signal to EACH amplifier - one amp for the Left channel and one amp for the Right channel.

Next, connect the Left "HIGH PASS OUTPUT" from the Left SA-600W to the Left input of your satellite's stereo power amplifier. Then, connect the Right "HIGH PASS OUTPUT" from the Right SA-600W to the Right input of your satellite's stereo power amplifier. This will feed a high-passed filtered signal (bass removed) to the Left and Right speakers once the internal crossover (XO) is turned ON. Removing the bass burden from your satellites will greatly enhance their performance. See the XO discussion on page 21 for additional info.

Now that your equipment is connected, refer to pages 28-31 and follow the directions for RECOMMENDED STEREO SYSTEM SETUP PROCEDURES.

WARNING! TURN OFF THE SA-600W AND ALL OTHER EQUIPMENT IN THE SYSTEM BEFORE MAKING OR CHANGING ANY CONNECTIONS!

WARNING

SYSTEM CONNECTION DIAGRAM 6: Connecting one SA-600W to a Receiver via the High Level Inputs

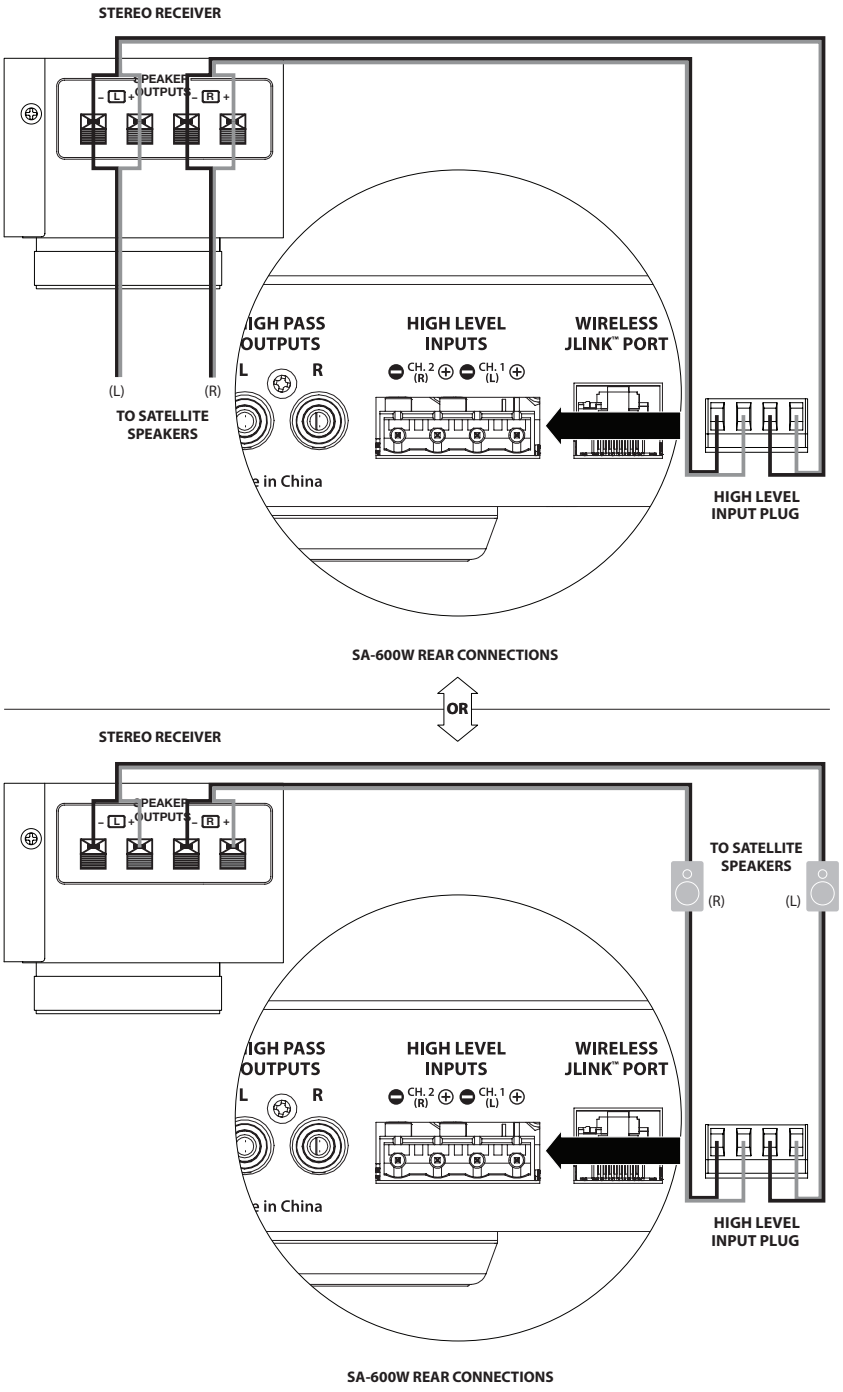
The SA-600W features high level inputs designed to accept the output of an amplified source, such as a stereo receiver's speaker outputs. The use of this feature is only recommended when no suitable line-level signal is available.

When connecting a single SA-600W in mono to a two-channel receiver's speaker outputs, you will use both the Left and Right connections on the "HIGH LEVEL INPUTS" plug of the SA-600W. Use good quality speaker cables (up to 12 AWG/3 mm^2) to make these connections. Make sure you capture all the wire strands in each connector port and do not allow any of these wires to short together.

You can make the connections to the SA-600W's "HIGH LEVEL INPUTS" at the receiver's output terminals, or at the main speakers, whichever is more convenient. On receivers with A/B speaker circuit selectors, you can connect the SA-600W to the "B" outputs, giving you the ability to easily switch the SA-600W's signal on and off with the receiver's speaker circuit selector switch.

The input section of your SA-600W will sum the left and right inputs to mono and you may use its onboard crossover (XO) to apply low-pass filtering. Because the main speakers are being fed in parallel with the "HIGH LEVEL INPUTS" of the SA-600W, they continue to operate as full-range speakers. Any adjustment to the crossover function (XO) will only affect the sound of the subwoofer(s) connected to the SA-600W's "SUBWOOFER OUTPUTS".

Note: It is vital to observe correct electrical polarity of each channel's input signal. Failure to do so can result in no output, loss of signal and poor performance.



RECOMMENDED STEREO SYSTEM SETUP PROCEDURES

1) Preparation for Setup Process: 28

2) Apply A.R.O: 29-30

3) Level Setting: 30

4) Polarity/Delay Adjustment: 31

5) Adjust E.L.F. Trim: 31

PREPARATION FOR STEREO SYSTEM SETUP:

Please confirm the following system settings before beginning the setup process. This will ensure a neutral starting point and an effective setup of your subwoofer system. **NOTE: In this Stereo System setup process, we assume that the SA-600W is handling bass management tasks.**

On your Stereo Preamp:

Before beginning setup of your SA-600W we recommend that you set your receiver or preamp/processor as follows:

1. Set Balance controls to Center.
2. Set all Tone controls to "0" and defeat all Equalizer features.
3. Defeat any secondary processing (DSP "enhancement" or room processing)

On the SA-600W:

Before beginning the stereo system setup procedure, ensure your SA-600W's controls are set to a neutral starting position.

1. Set GAIN to REF
2. Set POLAR to 0 deg
3. Set DELAY to OFF
4. Set ELF to OFF
5. Set XO to ON at 24dB, with a frequency of 80 Hz (79.9 Hz)
6. Set EQ to OFF

STEREO SYSTEM SUBWOOFER SETUP

Once you have adjusted the controls on your stereo preamp and your SA-600W to the above recommendations, you may apply the optional D.A.R.O. (Digital Automatic Room Optimization) system to optimize performance. **Note: Use of the D.A.R.O. feature requires the optional JL Audio D.A.R.O. Calibration Microphone (sold separately).**

In some systems, the SA-600W amplifier will be installed away from the listening environment. For these cases, the D.A.R.O. microphone cable may not be long enough to perform the Calibration.

To facilitate Calibration with the SA-600W amplifier in the listening room, a pair of alligator clips are included to connect to the subwoofer's speaker terminals. This will allow the user to temporarily connect the amplifier to the enclosure for Calibration, even after the enclosure is permanently installed in the wall cavity. To use, disconnect the enclosure's speaker leads from the subwoofer and use the alligator clips to connect the SA-600W's outputs to the subwoofer's speaker terminals.

IMPORTANT 

1) Applying Digital Automatic Room Optimization (D.A.R.O.)

You are now ready to apply the power of JL Audio's exclusive Digital Automatic Room Optimization (D.A.R.O.) system. This system will measure the response of the subwoofer at your primary listening seat and apply a powerful equalizer to tame the peaks caused by room modes, resulting in smoother, more accurate bass performance.

IMPORTANT! MAKE SURE THE ROOM IS QUIET DURING D.A.R.O. CALIBRATION! TURN OFF ANY NOISY APPLIANCES NEAR THE LISTENING ROOM (DISHWASHERS, WASHING MACHINES, ETC.).

IT IS PARTICULARLY IMPORTANT TO TURN OFF AIR CONDITIONERS OR HEAT PUMPS DURING CALIBRATION. THESE FORCED-AIR-TYPE HVAC SYSTEMS CAN CREATE MODERATE LEVELS OF 15 – 20 HZ NOISE THAT MAY INTERFERE WITH CALIBRATION.

a) Set the "Power" switch to the "on" position.

b) Remove the calibration microphone from its protective pouch and connect its cable to the "MIC" jack on the SA-600W's front control panel.

Note: D.A.R.O. Calibration is only possible when the JL Audio test microphone is plugged in to the SA-600W front panel. The "Calibrate" feature is disabled with no microphone plugged in to prevent accidental loss of settings.

c) Connect the microphone to the other end of the mic cable and temporarily place the mic in the primary listening seat. If you have a microphone stand, you can place the microphone at head height and position in the primary listening seat.

d) From the SA-600W's User Interface, go to "DARO", select "ON", then select "Calibrate". A 5 second countdown will begin with "Position Mic" displayed, indicating that the Calibration routine will begin in 5 seconds.

e) Within 5 seconds of selecting "Calibrate", return to your primary listening seat and hold the microphone in your normal, seated head position at the approximate height of your ears.

f) A low rumbling noise sequence will be played through the subwoofer system that sounds like distant thunder. The sequence will last approximately 3 minutes. During this process, the D.A.R.O. system is taking a frequency response measurement at your seat and correcting the problems it finds. The D.A.R.O. system also compensates for any before & after level differences so that your subwoofer will have a similar perceived loudness after the calibration process. When D.A.R.O. is finished calibrating, the "Calibrate" button will turn grey and the word "Calibrated" will appear in green underneath, indicating a successful calibration.

To clear the D.A.R.O. settings (i.e., return them to flat) & turn off the "Calibrated" indication, select "Clear DARO", then select "CONFIRM CLEAR" to verify.

Should you wish to run a completely new calibration, simply repeat Steps A-F. There is no need to erase the old calibration first. Any new calibration will overwrite the existing data.

IMPORTANT! IF YOU MOVE YOUR PRIMARY LISTENING SEAT IN THE FUTURE, YOU WILL NEED TO RUN D.A.R.O. AGAIN. ANY PARTICULAR CALIBRATION IS UNIQUE TO THAT PARTICULAR SUBWOOFER POSITION AND LISTENING SEAT POSITION COMBINATION.


IMPORTANT

2) Level Setting (GAIN)

Using familiar music material with deep bass content, adjust the subwoofer level to blend with the other speakers using the Variable "GAIN" function on the SA-600W. The subwoofer output level can be raised by up to 15 dB and can be attenuated by 30+ dB, if needed.

We recommend starting with the bass level a little bit too low and then, carefully raising the subwoofer output bit by bit until a perfect balance is achieved. Inadvertently having the bass too loud (even a couple of dBs) can mask midbass detail.

3) Polarity

It is often helpful to have a second person operating these controls so that you can easily hear the changes from the primary listening seat.

Listening to familiar source material (preferably music with good upper bass and midbass response), switch the "POLARITY" from "0 deg" to "180 deg" and listen for differences. This effect will be most noticeable in the small frequency region around the crossover point. The correct setting will sound most natural with the best upper bass punch and articulation. If both sound similar, choose "0".

4) DELAY (Phase) Adjustment

Now using the same music material, audition different "HP out DELAY" settings and choose the delay that further enhances the upper and midbass response. Delay is given in milliseconds.

When connected to a JL Audio subwoofer, we recommend starting with 10 milliseconds of HP out delay, which compensates for the small delay inherent in the SA-600W's built-in, box-correction EQ filter. Experiment with times just above and below the 10 millisecond mark, perhaps up to approximately 14 milliseconds. Choose the setting that most enhances the crossover region's response (subwoofer and satellite playing together).

If you cannot hear a difference in the various "HP out DELAY" settings, leave the control at 10 milliseconds.

5) ELF Adjustment (Extreme Low Frequency Trim)

Use the "ELF" control to adjust the extreme low bass extension of the SA-600W. This control allows -12 dB of cut or +3 dB of boost at 25 Hertz and is particularly useful when using a subwoofer (or two) in a small to medium sized home theater. Since smaller enclosed spaces help to boost the level of the lowest bass frequencies, smaller theaters can be overwhelmed by the strong low-bass output of the subwoofer. This can create a "thick" or "bloated" character in the lower bass region. Turning down the "ELF" cuts the extreme low bass level and alleviates this condition. Feel free to experiment and listen to a variety of demanding material until you find the best match for your room and your tastes.

Your SA-600W is now optimized for maximum bass performance at your preferred listening seat. Congratulations!

Use pages 38-39 to record your amplifier settings for future reference.

RECOMMENDED HOME THEATER SETUP PROCEDURES

1) Preparation for Setup Process: 32

2) Apply A.R.O: 33-34

3) Level Setting: 34

4) Polarity/Delay Adjustment: 34

5) Adjust E.L.F. Trim: 35

PREPARATION FOR HOME THEATER SETUP:

Please confirm the following system settings before beginning the setup process. This will ensure a neutral starting point and an effective setup of your subwoofer system. **NOTE: In this Home Theater setup process, we assume that the receiver or processor is handling bass management tasks (see Step 1 below).**

On your Home Theater Receiver or Processor:

Before beginning setup of your SA-600W, we recommend that you set your receiver or preamp/processor as follows:

1. **Speaker Size**: In the speaker setup menu of your receiver or processor, set up all of your high-frequency speakers as "small" with a crossover point of 80 Hz. This will send ALL bass to the SA-600W.
2. **Speaker Distance**: In the speaker setup menu, properly set all speaker distances to the primary listening seat, including the subwoofer's distance. Use a tape measure to determine these distances (time coherence is important.) If multiple subwoofers are being used, average their distances to the primary listening seat and use that number to set the subwoofer distance.
3. S**ubwoofer Level**: Set the subwoofer level in the receiver or processor to "0" or its middle position.
4. **Tone Controls/Equalizers**: Set all tone controls to "0" and defeat all equalizer features.

On the SA-600W:

Before beginning the home theater setup procedure, ensure your SA-600W's controls are set to a neutral starting position.

1. Set GAIN to REF
2. Set POLAR to 0 deg
3. Set DELAY to OFF
4. Set ELF to OFF
5. Set XO to OFF (crossover function is handled by your receiver/HT processor)
6. Set EQ to OFF

HOME THEATER SUBWOOFER SETUP

Once you have adjusted the controls on your home theater receiver or preamp/processor and your SA-600W to the above recommendations, you may apply the optional D.A.R.O. (Digital Automatic Room Optimization) system to optimize performance. **Note: Use of the D.A.R.O. feature requires the optional JL Audio D.A.R.O. Calibration Microphone (sold separately).**

In some systems, the SA-600W amplifier will be installed away from the listening environment. For these cases, the D.A.R.O. microphone cable may not be long enough to perform the Calibration.

To facilitate Calibration with the SA-600W amplifier in the listening room, a pair of alligator clips are included to connect to the subwoofer's speaker terminals. This will allow the user to temporarily connect the amplifier to the enclosure for Calibration, even after the enclosure is permanently installed in the wall cavity. To use, disconnect the enclosure's speaker leads from the subwoofer and use the alligator clips to connect the SA-600W's outputs to the subwoofer's speaker terminals.

1) Applying Digital Automatic Room Optimization (D.A.R.O.)

You are now ready to apply the power of JL Audio's exclusive Digital Automatic Room Optimization (D.A.R.O.) system. This system will measure the response of the subwoofer at your primary listening seat and apply a powerful equalizer to tame the peaks caused by room modes, resulting in smoother, more accurate bass performance.

a) Set the "Power" switch to the "on" position.

b) Remove the calibration microphone from its protective pouch and connect its cable to the "MIC" jack on the SA-600W's front control panel.

Note: D.A.R.O. Calibration is only possible when the JL Audio test microphone is plugged in to the SA-600W front panel. The "Calibrate" feature is disabled with no microphone plugged in to prevent accidental loss of settings.

c) Connect the microphone to the other end of the mic cable and temporarily place the mic in the primary listening seat. If you have a microphone stand, you can place the microphone at head height and position in the primary listening seat.

d) From the SA-600W's User Interface, go to "DARO", select "ON", then select "Calibrate". A 5 second countdown will begin with "Position Mic" displayed, indicating that the Calibration routine will begin in 5 seconds.

e) Within 5 seconds of selecting "Calibrate", return to your primary listening seat and hold the microphone in your normal, seated head position at the approximate height of your ears.

f) A low rumbling noise sequence will be played through the subwoofer system that sounds like distant thunder. The sequence will last approximately 3 minutes. During this process, the D.A.R.O. system is taking a frequency response measurement at your seat and correcting the problems it finds. The D.A.R.O. system also compensates for any before & after level differences so that your subwoofer will have a similar perceived loudness after the calibration process. When D.A.R.O. is finished calibrating, the "Calibrate" button will turn grey and the word "Calibrated" will appear in green underneath, indicating a successful calibration.

To clear the D.A.R.O.'s settings (i.e., return them to flat) & turn off the "Calibrated" indication, select "Clear DARO", then select "CONFIRM CLEAR" to verify.

Should you wish to run a completely new calibration, simply repeat the steps above. There is no need to erase the old calibration first. Any new calibration will overwrite the existing data.

IMPORTANT! MAKE SURE THE ROOM IS QUIET DURING D.A.R.O. CALIBRATION! TURN OFF ANY NOISY APPLIANCES NEAR THE LISTENING ROOM (DISHWASHERS, WASHING MACHINES, ETC.).

IT IS PARTICULARLY IMPORTANT TO TURN OFF AIR CONDITIONERS OR HEAT PUMPS DURING CALIBRATION. THESE FORCED-AIR-TYPE HVAC SYSTEMS CAN CREATE MODERATE LEVELS OF 15 – 20 HZ NOISE THAT MAY INTERFERE WITH CALIBRATION.


IMPORTANT

2) Level Setting (GAIN)

Using familiar music or movie material with deep bass content, adjust the subwoofer level to blend with the other speakers using your receiver or processor's subwoofer level control. This method is more immune to tampering than using the SA-600W's "GAIN" control (think toddlers or curious visitors).

In the unlikely event that the subwoofer level control in your receiver or processor cannot be turned up enough to level match the SA-600W, return that control to "0". Then, switch the SA-600W's GAIN mode to VAR (Variable). With "0" as your reference point (REF mode gain and VAR "0" gain are identical), use the "VAR" control to level match the subwoofer with the other speakers.

3) POLARITY and DELAY (Phase) Adjustment

It is often helpful to have a second person operating these controls so that you can easily hear the changes from the primary listening seat.

Listening to familiar source material (preferably music with good upper bass and midbass response), switch the "POLARITY" from "0 deg" to "180 deg" and listen for differences. The correct setting will sound most natural with the best upper bass punch and articulation. If both sound similar, choose "0".

Once "POLARITY" is set, use the same music material to audition different "Sub out DELAY" settings and choose the one that further enhances the upper and midbass response. Delay is given in milliseconds. Note that the HP out control only applies to the "HIGH PASS OUTPUTS" on the rear panel (not applicable if only a sub is connected to the SA-600W). If you can't hear a difference in various "DELAY" settings, set the control to "0."

4) ELF Adjustment (Extreme Low Frequency Trim)

Use the "ELF" control to adjust the extreme low bass extension of the SA-600W. This control allows -12 dB of cut or +3 dB of boost at 25 Hertz and is particularly useful when using a subwoofer (or two) in a small to medium sized home theater. Since smaller enclosed spaces help to boost the level of the lowest bass frequencies, smaller theaters can be overwhelmed by the strong low-bass output of the subwoofer. This can create a "thick" or "bloated" character in the lower bass region. Turning down the "ELF" cuts the extreme low bass level and alleviates this condition. Feel free to experiment and listen to a variety of demanding material until you find the best match for your room and your tastes.

Your SA-600W is now optimized for maximum bass performance at your preferred listening seat. Congratulations!

Use pages 38-39 to record your amplifier settings for future reference.

TROUBLESHOOTING

No sound from subwoofer.

1. Verify that the SA-600W is plugged in, turned "ON", with the Home Screen menu options displayed on the LCD Display. If the SA-600W will not power up, check the circuit breaker that feeds its outlet.
2. Verify that your receiver's subwoofer settings have not changed.
3. If your other speakers play, but the connected subwoofer does not, try changing the signal cables that feed the SA-600W or the speaker cables connecting the subwoofer to the SA-600W.
4. If using the High Level Inputs, verify the correct electrical polarity of each channel's input signal.
5. A Protection Mode message appears on the LCD display if the SA-600W's internal temperature exceeds maximum levels. This built-in safeguard disables the output signal to prevent damage to internal circuitry. Typical causes for this condition are poor air circulation, likely due to confined mounting locations, and should be corrected. Once the temperature decreases to normal levels, the Protection Mode will deactivate and the SA-600W will automatically resume normal operation.
6. If the problem persists, contact your dealer or JL Audio Technical Support for assistance.

Weak sound or poor performance when using the High Level Inputs.

1. Verify the correct electrical polarity of each channel's input signal.

The bass level has changed.

1. Make sure your GAIN settings on the SA-600W and the level settings on your receiver/preamp/processor have not changed.
2. Verify that the ELF TRIM setting has not changed.

Hums or other unusual noises from your subwoofer.

1. See Input Mode discussion on page 16 of this manual, especially if any upstream components, cables, etc., have recently changed.
2. Turn off the SA-600W, disconnect all its input and output signal cables, turn the SA-600W back on. If the noise disappears, the noise is being caused elsewhere in your system - reconnect cables one at a time to help locate the problem.

Bass sounds "muddy" or "too heavy".

1. Try decreasing the 25 Hertz level using the ELF Trim control. Muddy bass can sometimes be caused by too much low frequency output in a moderately sized room.
2. Decrease the overall subwoofer level.
3. Verify your receiver's subwoofer settings.
4. Try a different main listening seat location. Changing your seating location can have a HUGE effect on how your system sounds. See the placement discussion on pages 6-9 of this manual.

LIMITED WARRANTY / SERVICE INFORMATION

JL AUDIO warrants this product to be free of defects in materials and workmanship for a period of **three (3) years** from the original date of purchase.

Damage caused by the following is not covered under warranty: accident, misuse, abuse, product modification or neglect, failure to follow installation instructions, unauthorized repair attempts, misrepresentations by the seller. This warranty does not cover incidental or consequential damages and does not cover the cost of removing or reinstalling the unit(s) or shipping the unit(s) to JL Audio for service. Cosmetic damage due to accident or normal wear and tear is not covered under warranty.

This warranty is not transferable and applies only to the original purchaser of the product from an authorized JL AUDIO dealer. Warranty is voided if the factory-applied product serial number is removed or defaced.

Should service be necessary under this warranty for any reason due to manufacturing defect or malfunction, JL AUDIO will, at its discretion, repair or replace the defective product with new or remanufactured product at no charge.

Any applicable implied warranties are limited in duration to the period of the express warranty as provided herein beginning with the date of the original purchase at retail, and no warranties, whether express or implied, shall apply to this product thereafter. Some states do not allow limitations on implied warranties, therefore these 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.

WARNING



WARNING: THIS PRODUCT CONTAINS NO USER-SERVICEABLE PARTS. PRODUCT IN WHICH DISASSEMBLY, REPAIR AND/OR MODIFICATION HAS BEEN ATTEMPTED BY UNAUTHORIZED PARTIES WILL NOT BE COVERED UNDER WARRANTY.

If you need service on your JL AUDIO product:

All warranty returns should be sent to JL AUDIO freight prepaid through an authorized JL AUDIO dealer and must be accompanied by proof of purchase (a copy of the original sales receipt). Direct returns from consumers or non-authorized dealers will be refused unless specifically authorized by JL AUDIO with a valid return authorization number. Warranty expiration on products returned without proof of purchase will be determined from the manufacturing date code. Coverage may be invalidated as this date is previous to purchase date. Return only defective components. Non-defective items received will be returned freight-collect. Customer is responsible for shipping charges and insurance in sending the product to JL AUDIO. Freight damage on returns is not covered under warranty. Always include proof of purchase (sales receipt).

For Service Information in the U.S.A. please call:
JL Audio customer service:
(954) 443-1100 during normal business hours (Eastern Time)
JL Audio, Inc • 10369 North Commerce Parkway, Miramar, FL 33025

International Warranties:
Products purchased outside the United States of America are covered only by that country's distributor and not by JL Audio, Inc.

SETTINGS / NOTES

Date: ____ / ____ / ____

Description: _____

_____

System **Settings:** ☐ 12V OFF
☐ 12V ON

Box EQ ☐ IWS-8
☐ Other _____
☐ No EQ

ELF Trim: ☐ OFF
☐ ON ____.____dB

Gain: ☐ REF
☐ VAR ____.____dB

Auto Room Opt: ☐ OFF
☐ ON

Sub Polarity: ☐ 0 deg
☐ 180 deg

Crossover: ☐ OFF
☐ 12dB ____.____Hz
☐ 24dB ____.____Hz

Delay: ☐ OFF
☐ ON HP Out ____.____ms
Sub Out ____.____ms

EQ: ☐ OFF
☐ ON Band 1 ____.____Hz ____.____dB ____.____Q
Band 2 ____.____Hz ____.____dB ____.____Q
Band 3 ____.____Hz ____.____dB ____.____Q

Date: ____ / ____ / ____

Description: _____

_____

System **Settings:**
- ☐ 12V OFF
- ☐ 12V ON

Box EQ
- ☐ IWS-8
- ☐ Other _____
- ☐ No EQ

ELF Trim:
- ☐ OFF
- ☐ ON ____.____dB

Gain:
- ☐ REF
- ☐ VAR ____.____dB

Auto Room Opt:
- ☐ OFF
- ☐ ON

Sub Polarity:
- ☐ 0 deg
- ☐ 180 deg

Crossover:
- ☐ OFF
- ☐ 12dB ____.____Hz
- ☐ 24dB ____.____Hz

Delay:
- ☐ OFF
- ☐ ON HP Out ____.____ms
  Sub Out ____.____ms

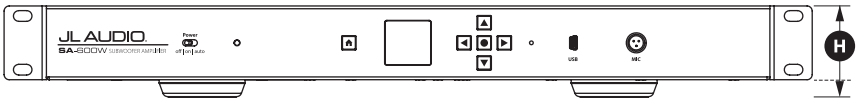
EQ:
- ☐ OFF
- ☐ ON

	Band 1	Band 2	Band 3
	____.____Hz	____.____Hz	____.____Hz
	____.____dB	____.____dB	____.____dB
	____.____Q	____.____Q	____.____Q

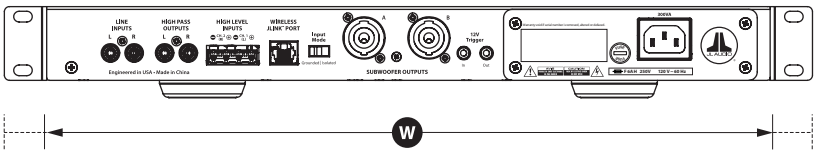
SA-600W

Specifications	SA-600W
Frequency Response:	1 Hz - 800 Hz (–3dB)
Amplifier Power: RMS short-term	300 watts x 1 @ 6 Ω 600 watts x 1 @ 3 Ω
Amplifier Net Weight:	13 lbs. (5.9 kg)
Table-Top Dimensions: (H) Height x (W) Width x (D) Depth Height Dimensions DO NOT include feet	1.75 in. x 16.84 in. x 13.63 in. 44 mm x 428 mm x 346 mm
Rack-Mount Dimensions: (H) Height x (W) Width x (D) Depth	1.75 in. x 19.0 in. x 13.63 in. 44 mm x 483 mm x 346 mm

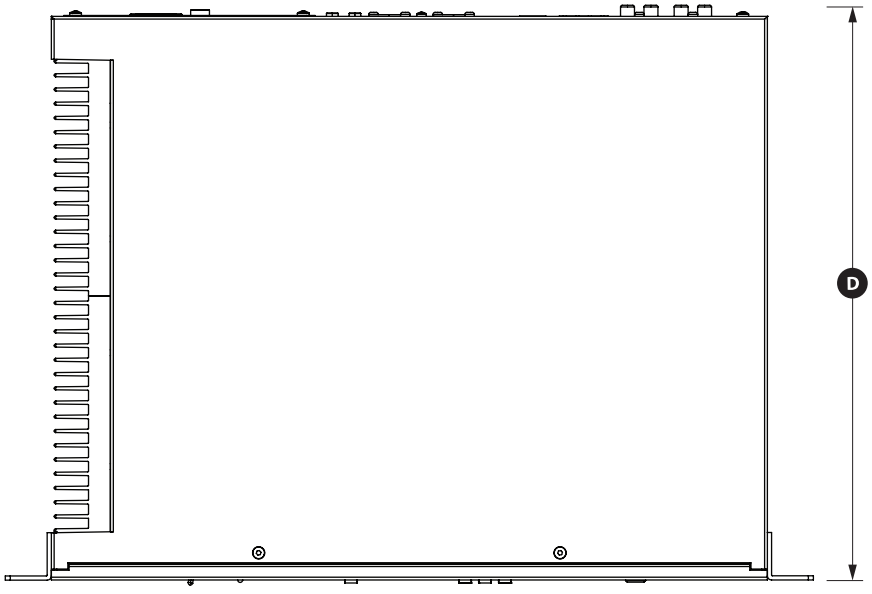
FRONT PANEL



BACK PANEL



TOP VIEW



JL AUDIO®

CEDIA CUSTOM ELECTRONIC DESIGN & INSTALLATION ASSOCIATION Member

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©2017 JL Audio, Inc. • U.S. PATENTS: #5,734,734 #5,949,898 #6,118,884 #6,229,902 #6,243,479 #6,294,959 #6,501,844 #6,496,590 #6,441,685 #5,687,247 #6,219,431 #6,625,292 #D472,891 #D480,709 Other U.S. & Foreign patents pending. For more detailed information please visit us online at **www.jlaudio.com**.

10369 North Commerce Parkway • Miramar, Florida • 33025 • USA

09262017

FEATURES

Unbalanced Inputs:
Stereo or Mono (two RCA jacks - Input Impedance of 50k Ohms)

Speaker/High Level Inputs:
Stereo or Mono (removable plug - Input Impedance of 4.4k Ohms)

Line Outputs:
Stereo or Mono (two RCA jacks - Pass-Through or High-Pass)

Speaker Outputs:
Neutrik speakOn® 2-Pole Connectors (uses Neutrik part: NL2FX)

Input Grounding:
Isolated or Grounded

Level Modes:
Reference (fixed gain) or
Variable from -50dB to +15dB over reference gain (0.5 dB increments)

Power Modes:
Off, On or Automatic (Signal-Sensing or 12V Trigger)

Filter Modes:
Off, 12 dB per octave or 24 dB per octave (Low-Pass, with tracking High-Pass Outputs)

Filter Cutoff Frequency:
Variable from 30 Hz – 130.1 Hz

Polarity:
0 or 180 degrees

Delay:
Variable from 0 – 25 ms
(0.1 ms increments, Sub and HP outputs)

E.L.F. Trim:
Variable from –12 dB to +3 dB at 25 Hz
(0.5 dB increments)

Equalizer Bands:
3

Equalizer Frequency Range:
20 to 160 Hz (1 Hz increments)

Equalizer Gain Range:
-12 dB to +12 dB (0.2 dB increments)

Equalizer Q Range:
0.7 to 5.0 (0.1 increments)

12V Trigger Output Capacity:
150 mA (1/8-inch/3.5mm mini jack)

Digital Automatic Room Optimization (D.A.R.O.)
Optional, requires laboratory-grade calibration microphone (sold separately), defeatable

Wireless Connectivity: Optional, JLINK TRX System (sold separately)