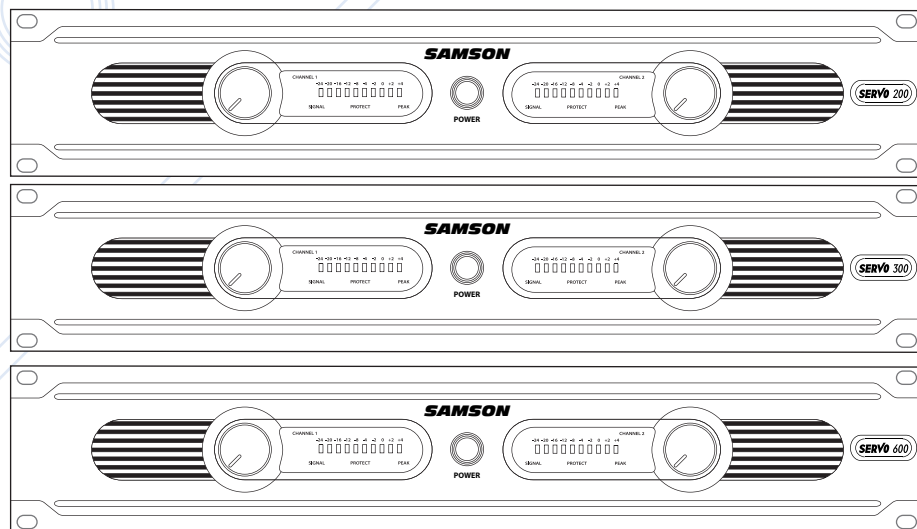


SERVO 200
SERVO 300
SERVO 600



Owners Manual

SAMSON
A U D I O

POWER AMPLIFIERS

SERVO SERIES

Safety Instructions/Consignes de sécurité/Sicherheitsvorkehrungen/Instrucciones de seguridad



WARNING: To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture. To reduce the hazard of electrical shock, do not remove cover or back. No user serviceable parts inside. Please refer all servicing to qualified personnel. The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Important Safety Instructions

1. Please read all instructions before operating the unit.
2. Keep these instructions for future reference.
3. Please heed all safety warnings.
4. Follow manufacturers instructions.
5. Do not use this unit near water or moisture.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. When the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on and pinched particularly at plugs, convenience receptacles and at the point at which they exit from the unit.
11. Unplug this unit during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified personnel. Servicing is required when the unit has been damaged in any way, such as power supply cord or plug damage, or if liquid has been spilled or objects have fallen into the unit, the unit has been exposed to rain or moisture, does not operate normally, or has been dropped.

ACHTUNG: Um die Gefahr eines Brandes oder Stromschlags zu verringern, sollten Sie dieses Gerät weder Regen noch Feuchtigkeit aussetzen. Um die Gefahr eines Stromschlags zu verringern, sollten Sie weder Deckel noch Rückwand des Geräts entfernen. Im Innern befinden sich keine Teile, die vom Anwender gewartet werden können. Überlassen Sie die Wartung qualifiziertem Fachpersonal. Der Blitz mit Pfeilspitze im gleichseitigen Dreieck soll den Anwender vor nichtisolierter "gefährlicher Spannung" im Geräteinnern warnen. Diese Spannung kann so hoch sein, dass die Gefahr eines Stromschlags besteht. Das Ausrufezeichen im gleichseitigen Dreieck soll den Anwender auf wichtige Bedienungs- und Wartungsanleitungen aufmerksam machen, die im mitgelieferten Informationsmaterial näher beschrieben werden.

Wichtige Sicherheitsvorkehrungen

1. Lesen Sie alle Anleitungen, bevor Sie das Gerät in Betrieb nehmen.
2. Bewahren Sie diese Anleitungen für den späteren Gebrauch gut auf.
3. Bitte treffen Sie alle beschriebenen Sicherheitsvorkehrungen.
4. Befolgen Sie die Anleitungen des Herstellers.
5. Benutzen Sie das Gerät nicht in der Nähe von Wasser oder Feuchtigkeit.
6. Verwenden Sie zur Reinigung des Geräts nur ein feuchtes Tuch.
7. Blockieren Sie keine Belüftungsöffnungen. Nehmen Sie den Einbau des Geräts nur entsprechend den Anweisungen des Herstellers vor.
8. Bauen Sie das Gerät nicht in der Nähe von Wärmequellen wie Heizkörpern, Wärmeklappen, Öfen oder anderen Geräten (inklusive Verstärkern) ein, die Hitze erzeugen.
9. Setzen Sie die Sicherheitsfunktion des polarisierten oder geerdeten Steckers nicht außer Kraft. Ein polarisierter Stecker hat zwei flache, unterschiedlich breite Pole. Ein geerdeter Stecker hat zwei flache Pole und einen dritten Erdungsstift. Der breitere Pol oder der dritte Stift dient Ihrer Sicherheit. Wenn der vorhandene Stecker nicht in Ihre Steckdose passt, lassen Sie die veraltete Steckdose von einem Elektriker ersetzen.
10. Schützen Sie das Netzkabel dahingehend, dass niemand darüber laufen und es nicht geknickt werden kann. Achten Sie hierbei besonders auf Netzstecker, Mehrfachsteckdosen und den Kabelanschluss am Gerät.
11. Ziehen Sie den Netzstecker des Geräts bei Gewittern oder längeren Betriebspausen aus der Steckdose.
12. Überlassen Sie die Wartung qualifiziertem Fachpersonal. Eine Wartung ist notwendig, wenn das Gerät auf irgendeine Weise, beispielsweise am Kabel oder Netzstecker beschädigt wurde, oder wenn Flüssigkeiten oder Objekte in das Gerät gelangt sind, es Regen oder Feuchtigkeit ausgesetzt war, nicht mehr wie gewohnt betrieben werden kann oder fallen gelassen wurde.

ATTENTION: Pour éviter tout risque d'électrocution ou d'incendie, ne pas exposer cet appareil à la pluie ou à l'humidité. Pour éviter tout risque d'électrocution, ne pas ôter le couvercle ou le dos du boîtier. Cet appareil ne contient aucune pièce remplaçable par l'utilisateur. Confiez toutes les réparations à un personnel qualifié. Le signe avec un éclair dans un triangle prévient l'utilisateur de la présence d'une tension dangereuse et non isolée dans l'appareil. Cette tension constitue un risque d'électrocution. Le signe avec un point d'exclamation dans un triangle prévient l'utilisateur d'instructions importantes relatives à l'utilisation et à la maintenance du produit.

Consignes de sécurité importantes

1. Veuillez lire toutes les instructions avant d'utiliser l'appareil.
2. Conserver ces instructions pour toute lecture ultérieure.
3. Lisez avec attention toutes les consignes de sécurité.
4. Suivez les instructions du fabricant.
5. Ne pas utiliser cet appareil près d'une source liquide ou dans un lieu humide.
6. Nettoyez l'appareil uniquement avec un tissu humide.
7. Veillez à ne pas obstruer les fentes prévues pour la ventilation de l'appareil. Installez l'appareil selon les instructions du fabricant.
8. Ne pas installer près d'une source de chaleur (radiateurs, etc.) ou de tout équipement susceptible de générer de la chaleur (amplificateurs de puissance par exemple).
9. Ne pas retirer la terre du cordon secteur ou de la prise murale. Les fiches canadiennes avec polarisation (avec une lame plus large) ne doivent pas être modifiées. Si votre prise murale ne correspond pas au modèle fourni, consultez votre électricien.
10. Protégez le cordon secteur contre tous les dommages possibles (pincement, tension, torsion, etc.). Veillez à ce que le cordon secteur soit libre, en particulier à sa sortie du boîtier.
11. Déconnectez l'appareil du secteur en présence d'orage ou lors de périodes d'inutilisation prolongées.
12. Consultez un service de réparation qualifié pour tout dysfonctionnement (dommage sur le cordon secteur, baisse de performances, exposition à la pluie, projection liquide dans l'appareil, introduction d'un objet dans le boîtier, etc.).

PRECAUCION: Para reducir el riesgo de incendios o descargas, no permita que este aparato quede expuesto a la lluvia o la humedad. Para reducir el riesgo de descarga eléctrica, nunca quite la tapa ni el chasis. Dentro del aparato no hay piezas susceptibles de ser reparadas por el usuario. Dirija cualquier reparación al servicio técnico oficial. El símbolo del relámpago dentro del triángulo equilátero pretende advertir al usuario de la presencia de "voltajes peligrosos" no aislados dentro de la carcasa del producto, que pueden ser de la magnitud suficiente como para constituir un riesgo de descarga eléctrica a las personas. El símbolo de exclamación dentro del triángulo equilátero quiere advertirle de la existencia de importantes instrucciones de manejo y mantenimiento (reparaciones) en los documentos que se adjuntan con este aparato.

Instrucciones importantes de seguridad

1. Lea todo este manual de instrucciones antes de comenzar a usar la unidad.
2. Conserve estas instrucciones para cualquier consulta en el futuro.
3. Cumpla con todo lo indicado en las precauciones de seguridad.
4. Observe y siga todas las instrucciones del fabricante.
5. Nunca utilice este aparato cerca del agua o en lugares húmedos.
6. Limpie este aparato solo con un trapo suave y ligeramente humedecido.
7. No bloquee ninguna de las aberturas de ventilación. Instale este aparato de acuerdo a las instrucciones del fabricante.
8. No instale este aparato cerca de fuentes de calor como radiadores, calentadores, hornos u otros aparatos (incluyendo amplificadores) que produzcan calor.
9. No anule el sistema de seguridad del enchufe de tipo polarizado o con toma de tierra. Un enchufe polarizado tiene dos bornes, uno más ancho que el otro. Uno con toma de tierra tiene dos bornes normales y un tercero para la conexión a tierra. El borne ancho o el tercero se incluyen como medida de seguridad. Cuando el enchufe no encaje en su salida de corriente, llame a un electricista para que le cambie su salida anticuada.
10. Evite que el cable de corriente quede en una posición en la que pueda ser pisado o aplastado, especialmente en los enchufes, receptáculos y en el punto en el que salen de la unidad.
11. Desconecte de la corriente este aparato durante las tormentas eléctricas o cuando no lo vaya a usar durante un periodo de tiempo largo.
12. Dirija cualquier posible reparación solo al servicio técnico oficial. Deberá hacer que su aparato sea reparado cuando esté dañado de alguna forma, como si el cable de corriente o el enchufe están dañados, o si se han derramado líquidos o se ha introducido algún objeto dentro de la unidad, si esta ha quedado expuesta a la lluvia o la humedad, si no funciona normalmente o si ha caído al suelo.

Table of Contents

Introduction	2
Servo Series Features	3
Guided Tour	4-5
Front Panel	4
Rear Panel	5
Setting Up and Using Your Servo Series	6
The Servo Series Protection Circuitry	7
Bridge Mode	8
Servo Series Connections	9
Specifications	10
Appendix A: Power Output vs. THD	11
Appendix B: Frequency Response	12

Copyright 2005, Samson Technologies Corp.

Printed March, 2005

Samson Technologies Corp.
575 Underhill Blvd.
P.O. Box 9031
Syosset, NY 11791-9031
Phone: 1-800-3-SAMSON (1-800-372-6766)
Fax: 516-364-3888

Introduction

Thank you for purchasing the Servo Series Power Amplifier from Samson Audio! We know you don't like reading owners manuals, but you've just purchased one of the finest sound reinforcement power amplifiers around, and we want to tell you about it. So, before you plug in, we'd like to suggest you take just a few moments out to scan these pages. We'll make it as painless as possible, we promise—and, who knows, you might just pick up a tip or two.

The Samson Servo Series stereo power amplifiers have been designed to provide robust, clean output with low distortion and wide dynamic range, along with the dependability demanded by the most professional audio engineers and installers.

Their convenient 2 rack-space design is compact, and yet there's plenty of power available, with 2 x 66 Watts at 8Ω, 2 x 100 Watts at 4Ω for the Servo 200, 2 x 100 Watts at 8Ω, 2 x 150 Watts at 4Ω for the Servo 300, 2 x 225 Watts at 8Ω, 2 x 300 Watts at 4Ω for the Servo 600, over the full frequency spectrum, from 10 Hz to 55 kHz.

For mono applications, a Bridge mode links both channels of the amplifiers, thus providing even more single channel power, with power ratings of 200 watts for the Servo 200, 300 watts for the Servo 300, 600 watts for the Servo 600 into a 8 ohms load.

Input connections are available for both unbalanced RCA connections and balanced 1/4-inch TRS connections. For the outputs, the Servo Series amplifiers provide standard 5-way binding posts and 1/4" phone jacks. Front-panel controls and displays include a power switch with LED indicator, as well as independent left and right channel input level controls. To help you set the correct operating levels, the Servo Series amplifiers include front panel Signal, Peak and Protection LED indicators. There's also a ten-segment Level VU meter to help you set a good operating level.

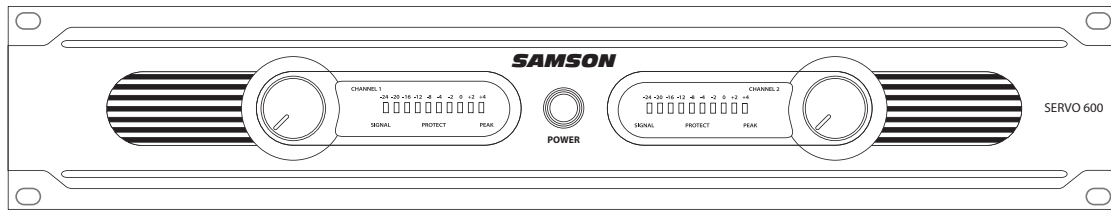
Like all serious power amplifiers, the Servo Series internal electronics are based around a serious power-core, with over-sized toroidal transformers and large extruded heat sinks. To keep the Servo Series amplifiers running cool, their design employs twin internal wind tunnels with forced-air cooling via two temperature-sensitive, variable speed fans, which greatly reduce the chance of thermal and overheating problems. Multi-stage protection for power-up, overheating, over-current, short circuit, low output impedance and DC voltage, assures high reliability under the most demanding situations.

The Servo Series amps are road tough with their all steel chassis and 19-inch rack mount design. The Servo Series amplifiers are ready for a life on the road, or to make their home in a nice fixed installation.

Optimized for live sound venues, houses of worship, commercial installations, and for driving small and medium-sized live PA systems, the Servo Series amplifiers will deliver reliable power from gig-to-gig, venue-to-venue and day-to-night.

In these pages, you'll find a detailed description of the many features of the Servo Series power amplifier, as well as a guided tour through its front and rear panels, step-by-step instructions for its setup and use, and full specifications. You'll also find a warranty card enclosed—please don't forget to fill it out and mail it in so that you can receive online technical support and so we can send you updated information about these and other Samson products in the future. SPECIAL NOTE: Should your Servo Series ever require servicing, a Return Authorization number (RA) is necessary. Without this number, the unit will not be accepted. If purchased in the United States, please call Samson at 1-800-372-6766 for a Return Authorization number prior to shipping the unit. If purchased outside the United States, contact your local Samson dealer for details. Please retain the original packing materials and, if possible, return the unit in its original carton and packing materials.

Servo Series Features



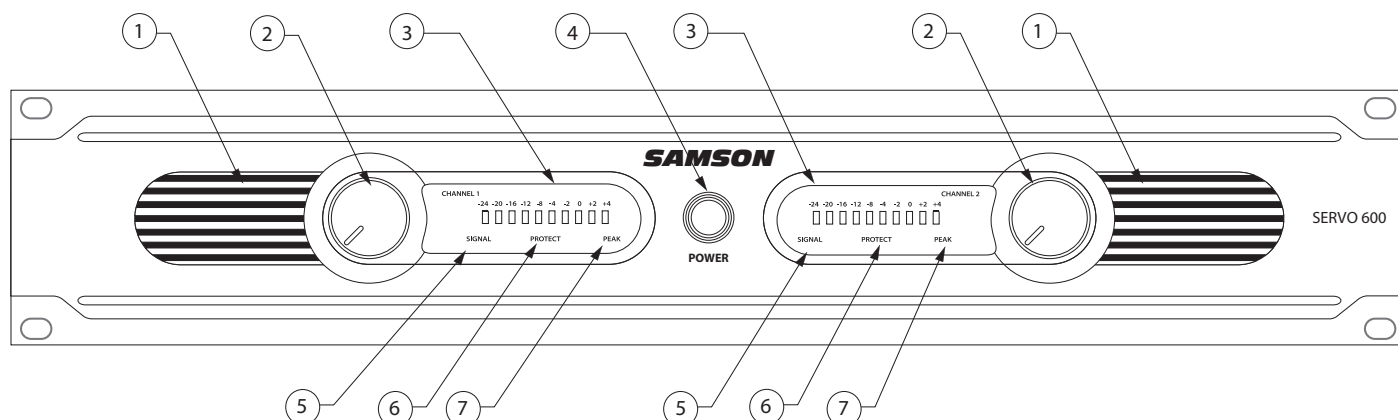
The Samson Servo Series power amplifier utilizes the latest technology in professional power amplifier design. Here are some of its main features:

- Power to spare - Each amplifier delivers the following power ratings.

Servo 200 2 x 66 Watts at 8Ω, 2 x 100 Watts at 4Ω
Servo 300 2 x 100 Watts at 8Ω, 2 x 150 Watts at 4Ω
Servo 600 2 x 225 Watts at 8Ω, 2 x 300 Watts at 4Ω

- For mono applications, a Bridge mode links both channels of the amplifiers, thus providing even more power, with power ratings of 200 watts for the Servo 200, 300 watts for the Servo 300, and 600 watts for the Servo 600, all driving an 8 Ohm load.
- Clean, crisp sound - Impressive audio specifications such as 0.04% THD, dynamic range of 105 dB, crosstalk of 80 dB, and frequency response of 10 Hz to 55 kHz guarantee ultra-clean sound quality.
- Independent input level controls for each channel allow precision adjustments.
- 10 segment LED signal indicators for each channel continuously display power output levels and allow you to correct for overloading (clipping) conditions.
- Unique stable bipolar circuit design that continuously keeps DC output during idling at or near zero volts (thus keeping idle speakers at their zero point). This serves to minimize heat overload problems by effectively preventing the Servo Series from applying power when unnecessary.
- Forced air cooling via two temperature-sensitive, variable speed fans provides reliable performance without thermal and overheating problems.
- Protection relay circuitry (with dedicated LEDs for each channel) that guards against overheating or faulty wiring conditions and also prevents “thumps” when powering on or off. This means that you can use the Servo Series with a single power strip into which a mixer or other audio devices are connected, without danger of damage to connected speakers.
- Input connectors for each channel accommodate both RCA or balanced 1/4-inch TRS plugs.
- Output connections are made via 5-way binding posts.
- Toroidal transformer power supply for high current and low profile.
- User-resettable circuit breaker for fast, easy startup following a power supply overload.
- The Servo Series can be mounted in any standard 19" rack (taking just two rack spaces), making it easy to integrate the amp into any fixed or traveling PA rig.
- Rugged construction (an all-steel chassis with a cool gray finish and a lightweight anodized aluminum heat sink) makes the Servo Series eminently roadworthy.
- Extended three-year warranty.
- Last but certainly not least, value. The Samson Servo Series has been designed from the ground up to deliver excellent yet affordable sound quality.

Guided Tour - Front Panel



1: Fan Vent - The Servo Series amplifiers stay cool thanks to their twin, forced-air cooling tunnels. Cool air is drawn through the front panel fan vents, reducing the temperature of the internal components while forcing the heat out the rear vents. The fans will actually sense the internal temperature and adjust their speed to maintain the optimum cooling conditions.

2: Channel input level controls - These 42-position detented controls allow you to precisely adjust the input level of the signal arriving at the rear-panel input jacks (see #1 and #5 on the following page). At their fully counterclockwise position (labeled "MIN"), the signal is attenuated by 80 dB (essentially completely off). At their fully clockwise position (labeled "MAX"), the signal is at unity gain (that is, no attenuation). When +4 dBu of signal arrives at the input jacks and the Channel input level controls are set to their fully clockwise position, the Servo Series delivers full power output.

3: LED meters - These ten-segment LED meters continuously monitor the power output level for the corresponding channel. For convenience, the segments are labeled, from left to right, -24 dB, -20 dB, -16 dB, -12 dB, -8 dB, -4 dB, -2 dB, 0, +2 dB and +4 dB (PEAK). The right (PEAK) segment lights whenever the channel is outputting signal at full strength. For the best signal-to-noise ratio, the right (PEAK) segment should light occasionally during peak levels; if it lights frequently, you may be overloading the amplifier and a distorted ("clipped") signal is probably being output. If this occurs and backing off the Input Level control delivers too low an output level for your application, consider using Bridged mode (see the "Bridged Mode" section on page 8 in this manual for more information).

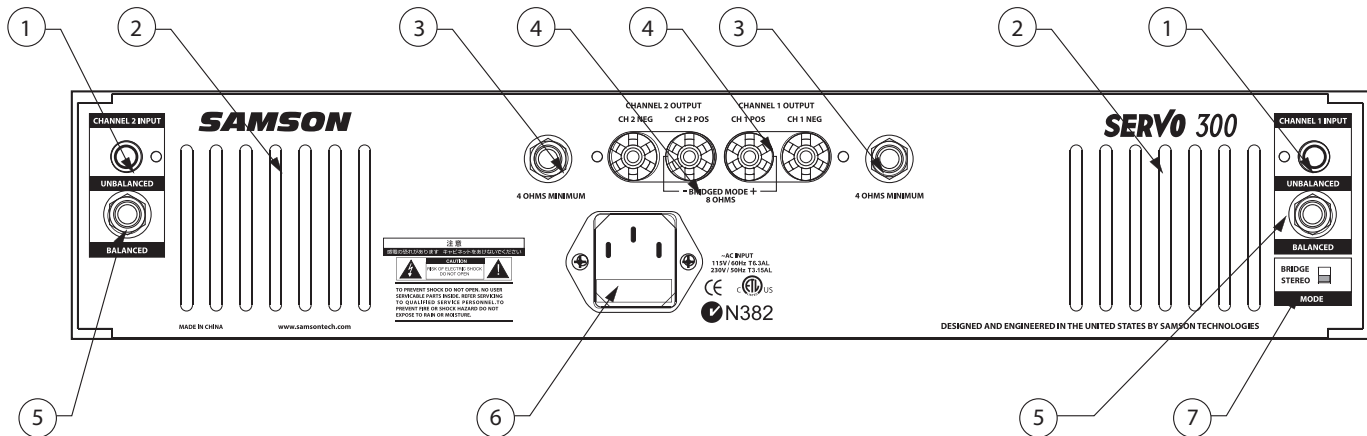
4: Power switch - Use this to power the Servo Series on or off. The internal LED lights whenever the Servo Series is powered on.

5: Signal LED - The front panel LED indicators continuously monitor the power output level for the corresponding channel. The SIGNAL LED lights whenever output signal is present.

6: Protection LED - This goes on for approximately five seconds whenever the Servo Series is powered on and then turns off (you'll hear a "click" when it does so). The Protection LED will also light when overheating or other severe problems occur (see page 6 in this manual for more information). It is normal for the Protection LED to fade slowly when the amp is powered off. When lit, no signal is provided to any connected speakers, thus muting them and preventing any "thump" from occurring. For a complete description of the conditions under which this light goes on, see the section entitled "The Servo Series Protection Circuitry" on page 7 of this manual.

7: Peak LED - The PEAK segment lights whenever the channel is outputting signal at full strength. For the best signal-to-noise ratio, the right (PEAK) segment should light occasionally during peak levels; if it lights frequently, you may be overloading the Servo Series and a distorted ("clipped") signal is probably being output. If this occurs and backing off the Input Level control delivers too low an output level for your application, consider using Bridged mode (see the "Bridged and Parallel Modes" section on page 8 in this manual for more information).

Guided Tour - Rear Panel



1: RCA Input connectors – You can connect unbalanced incoming signals to the Servo series using the RCA connectors, which are wired as follows: Pin 2 (or Tip) hot, and Pin 1 (or Sleeve) ground. The Servo Series accepts input levels of any strength but needs at least -10dBV dBu to achieve maximum power. Stereo signals should be connected to both the Channel 1 and Channel 2 input jacks; however, when operating the Servo Series in Bridged mode, use the Channel 1 input jack only. See page 8 in this manual for more information about Bridge mode and page 9 in this manual for full interconnection instructions.

2: Fan - This variable-speed fan provides vital cooling to your Servo Series (the hotter the amp gets, the faster the fan blows!). Make sure that both the front and rear panels are kept free of all obstructions and that cool, fresh air is accessible at all times. Also, try to ensure that the Servo Series is used in a dust-free environment.

3: 1/4-inch Output Connectors - Use these to connect each channel of the Servo Series to 4-ohm or 8-ohm loudspeakers with 1/4-inch input jacks. See page 8 in this manual for more information about Bridged mode and page 9 in this manual for full speaker connection instructions.

4: 5-way Binding Post - Use these to connect each channel of the Servo Series to 4-ohm or 8-ohm loudspeakers. Be sure to connect the loudspeaker correctly, with the red (+) terminal normally connected to the positive input of the speaker and the black (ground) terminal normally connected to the negative input of the speaker. See page 8 in this manual for more information about Bridge mode and page 9 in this manual for full speaker connection instructions

5: 1/4-inch Input Connectors - Connect incoming signals to these electronically balanced inputs, using the 1/4"TRS (Tip/Ring/Sleeve) plugs, wired as follows: Pin 2 (or Tip) hot, Pin 3 (or Ring) cold, and Pin 1 (or Sleeve) ground. We recommend the use of balanced three-conductor cabling wherever possible (unbalanced two-conductor 1/4" plugs can also be inserted into these inputs, but you'll get better signal quality and less outside noise and hum if you use balanced lines). The Servo Series accepts input levels of any strength but needs at least +4 dBu to achieve maximum power. Stereo signals should be connected to both the Channel 1 and Channel 2 input jacks; however, when operating the Servo Series in Bridged mode, use the Channel 1 input jack only. See page 8 in this manual for more information about Bridge mode and page 9 in this manual for full interconnection instructions.

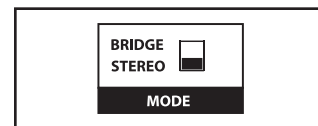
6: AC input - Connect the supplied heavy-gauge 3-pin "IEC" power cable here.

7: Bridge / Stereo switch - For normal operation, place this two-way switch in its lower ("STEREO") position. When placed in its upper ("BRIDGE") position, the signal arriving at the Channel 1 input only is again routed to both power amplifiers (again, the Channel 2 input is ignored), but the two power amplifiers are bridged together. For more information, see the "Bridge Mode" section on page 8 in this manual and the "Servo Series Connections" section on page 9 in this manual. **WARNING:** Due to the extremely high power output of the Servo Series when used in Bridge mode, be sure to use only loudspeakers sufficiently rated to handle the resultant wattage (in Bridge mode, these must be 8-ohm speakers).

Setting Up and Using Your Servo Series

Setting up your Servo Series is a simple procedure which takes only a few minutes:

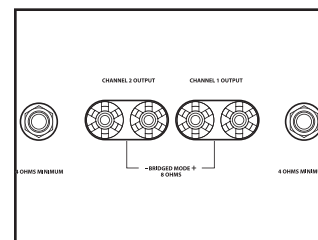
1. Remove all packing materials (save them in case of need for future service) and decide where the amplifier is to be physically placed—it can be used free-standing or mounted in a standard 19" rack, requiring only two rack spaces. When installed, make sure that both the front and rear panels are unobstructed and that there is good ventilation around the entire unit (we recommend the use of spacer panels, especially if multiple amplifiers are used in a rack.)



Bridge / Stereo switch

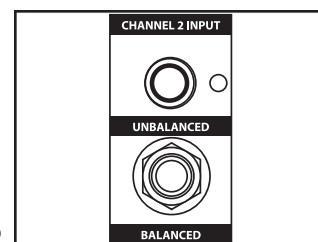
2. Set the rear panel Bridge/ Stereo switch as desired (see the "Bridge Mode" section on page 8 in this manual for more information).

3. Make the speaker connections, using the banana or 1/4-inch output connectors on the rear panel. It is never a good idea to power up any amplifier that is not connected to loudspeakers. When operating in Stereo mode, any loudspeakers with a minimum impedance load of 4 ohms (that is, 4 ohms or greater) can be used; however, in Bridged mode, 16 or 8 ohm speakers must be used. Be sure to connect the loudspeaker correctly. In Stereo mode, make sure the red (+) terminal is connected to the positive input of the speaker and the black (ground) terminal is connected to the negative input of the speaker. See page 8 in this manual for more information about Bridged mode and page 9 in this manual for full speaker interconnection instructions.



Output connectors

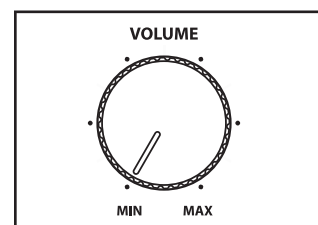
4. Next, make the signal input connections, using the RCA or 1/4-inch input connectors on the rear panel (if operating the Servo Series in Bridged mode, use the Channel 1 input only—see page 8 in this manual for more information). If your mixer or crossover network has balanced outputs, we recommend the use of three-conductor cabling and connectors (unbalanced two-conductor plugs can also be inserted into the 1/4-inch inputs, but you'll get better signal quality and less outside noise and hum if you use balanced lines).



Input connectors

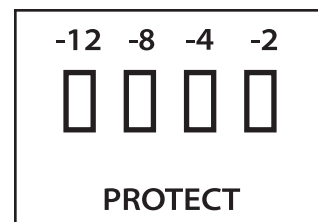
5. On the front panel of the Servo Series, turn both Channel input controls fully counterclockwise (to their "MIN" setting). Then connect the supplied heavy-gauge 3-pin "IEC" cable to the rear panel IEC connector and to any grounded AC socket.

Because of the relay protection circuitry built into the Servo Series, you can even plug it into the same power strip that other audio devices (such as a mixing console) are connected to. You can then turn on all devices at once with the single power strip on-off switch, with no danger of damaging connected speakers by generating "thumps."



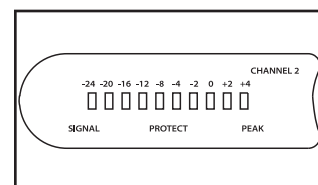
Channel Input control

6. Press the front panel Power switch in order to turn on the Servo Series. The Power LED will light and the Protection LED will go on. After approximately five seconds, the Protection LED will go off (you'll hear a click when this occurs).



Protection LED

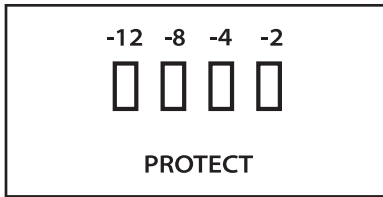
7. Apply an input signal to the Servo Series at or about +4dBu (if sending signal from a mixer, drive the output meters at approximately 0 vu). While the input signal is present, slowly raise the Channel Input controls until the desired sound level is achieved. The SIGNAL and PEAK LED indicators next to each Channel input control will show you the continuous power output of the Servo Series as signal is being passed. For the best signal-to-noise ratio, the Servo Series should normally be run with the Channel Input controls at or near maximum (fully clockwise, at the "MAX" position) and the PEAK segments should light occasionally (but not frequently) during peak levels. If you are using a mixer that has a master output level control (sometimes called "control room level"), use it to attenuate the signal as necessary to achieve the desired speaker level.



Three-segment LED meter

If you encounter difficulty with any aspect of setting up or using your Servo Series, contact your local Samson dealer. If purchased in the United States, you can call Samson Technical Support (1-800-372-6766) between 9 AM and 5 PM EST

The Servo Series Protection Circuitry



As noted in the “Guided Tour” section of this manual, the Servo Series front-panel Protection LED indicates the activity of the relay speaker connection circuitry. When the Protection LED is lit, this circuitry is active, and all connected speakers are muted (provided with no signal), thus protecting them and preventing any audible “thump” from occurring.

The following conditions will cause the Protection LED to go on:

- *Initial power-up:* For approximately five seconds after initial power-up, the protection circuitry is activated and the speaker outputs are muted. If everything is operating normally, you will hear an audible click at the conclusion of this brief period, as the protection circuitry is deactivated and the Servo Series begins delivering signal to connected speakers (at which point you’ll hear a click). It is normal for the Protection LED to fade gradually after the amplifier is powered off.

WARNING: If the Protection LED fails to go out (and you fail to hear the accompanying audible click) approximately five seconds after power-up, turn the Servo Series off immediately and check all external devices and wiring for possible shorts or other defects.

- *Overheating:* A temperature sensing device in the Servo Series will cause the protection circuitry to be activated (and the Protection LED to go on) whenever the operating temperature of the unit rises above a safe level. To guard against this problem, make sure the Servo Series receives adequate ventilation on all sides and that both the front and rear panels are unobstructed.
- *Severe overcurrent conditions:* This occurs whenever the signal being output from the Servo Series rises to a level above 20% THD (Total Harmonic Distortion).
- *Shorted speaker cables:* This will occur if, due to faulty wiring, the hot and ground signals being output by the Servo Series are shorted to one another.
- *Output impedance drops below 4 ohms:* This can occur if the Servo Series is connected to inappropriate speaker systems (see the “Setting Up and Using Your Servo Series” section on page 6 in this manual for more information).
- *DC voltage detected at speaker output:* The most likely cause of this is an internal failure.

In general, any time the Protection LED lights up (other than during the approximately five seconds following initial power-up), there is reason to be concerned. If this occurs, turn the Servo Series off immediately and carefully check all wiring and external devices in order to locate and correct the condition that caused the LED to light up in the first place.

For further assistance, contact your local Samson dealer. If purchased in the United States, you can call Samson Technical Support (1-800-372-6766) between 9 AM and 5 PM EST.

Bridge Mode

The Servo Series provides a rear-panel switch that allows it to be used in either Stereo or Bridge mode. When this switch is placed in the "STEREO" (down) position, the Servo Series functions as a true stereo amplifier, where both of the two independent amplifier channels (Channel 1 and Channel 2) can receive different input signals and produce independent output signals. However, when the switch is placed in the "BRIDGE" (up) position, the Channel 1 input signal is routed to both power amplifiers bridged together, producing a single output signal of 200 watts for the Servo 200, 300 watts for the Servo 300, and 600 watts for the Servo 600.



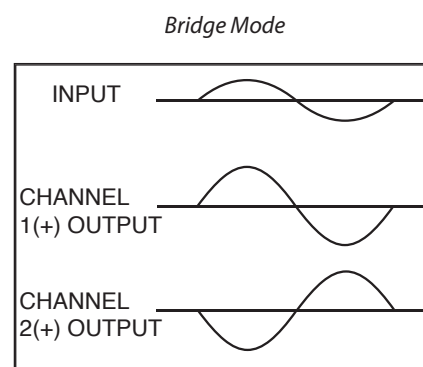
The illustration on the right shows how this works. In Bridged mode, the polarity (phase) of the Channel 2 output signal is reversed relative to that of the Channel 1 output signal. Both channels then process the same input signal, with the speaker load connected so that power is derived from both channels. The effective voltage swing seen by the load is thus doubled, so that the power output is multiplied by more than two.

WARNING: Bridge mode is to be used only when the Servo Series is connected to an 8 ohm speaker load. Use of Bridged mode with speaker loads of 4 ohms or less can result in severe damage to the unit due to excessive heat and current limiting and will void your warranty!

When using the Servo Series in Bridge mode, be sure to connect your loudspeaker as shown in the illustrations on page 9 (and as silkscreened on the rear panel), with the red (+) terminal of the Channel 1 output connected to the positive input of the speaker and the red (+) terminal of the Channel 2 output connected to the negative input of the speaker.

Do not use the black ground (-) output terminal of either channel (the speaker load must "float" away from the amplifier chassis).

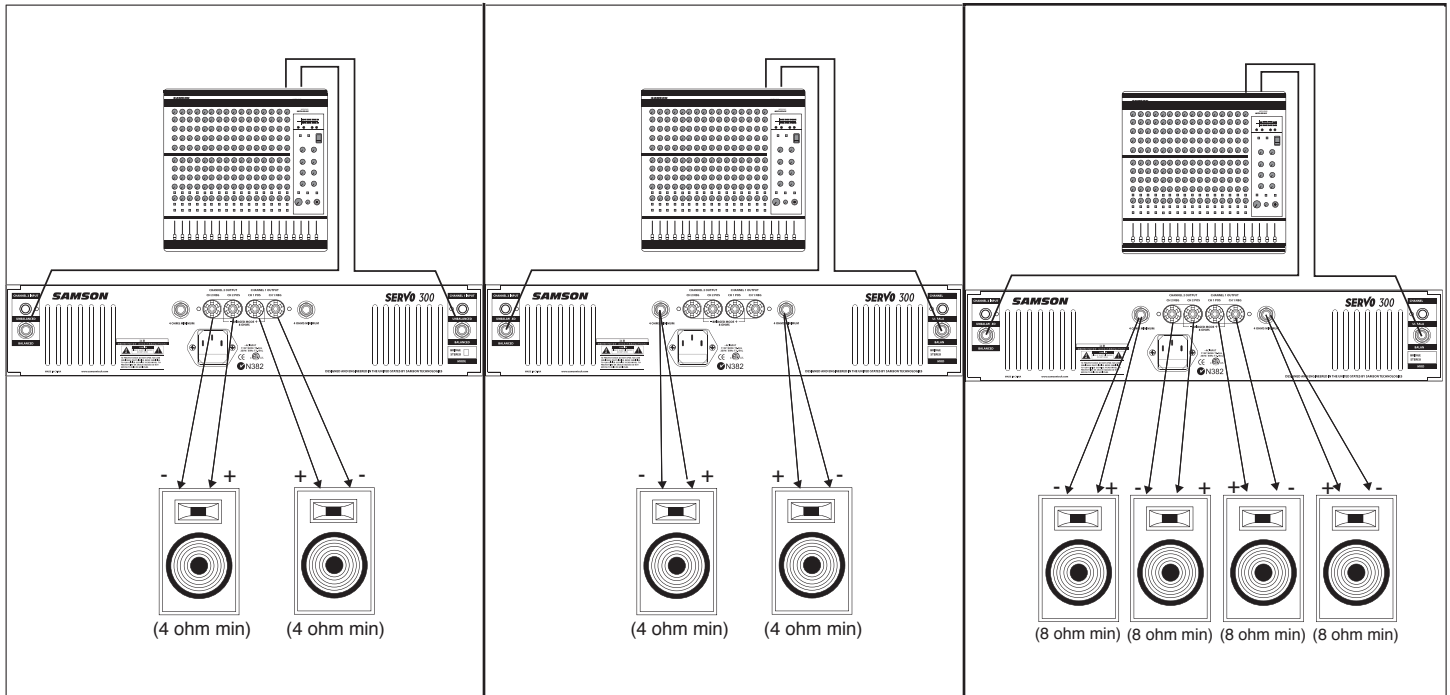
See pages 9 in this manual for interconnection diagrams when using the Servo Series in Bridge mode.



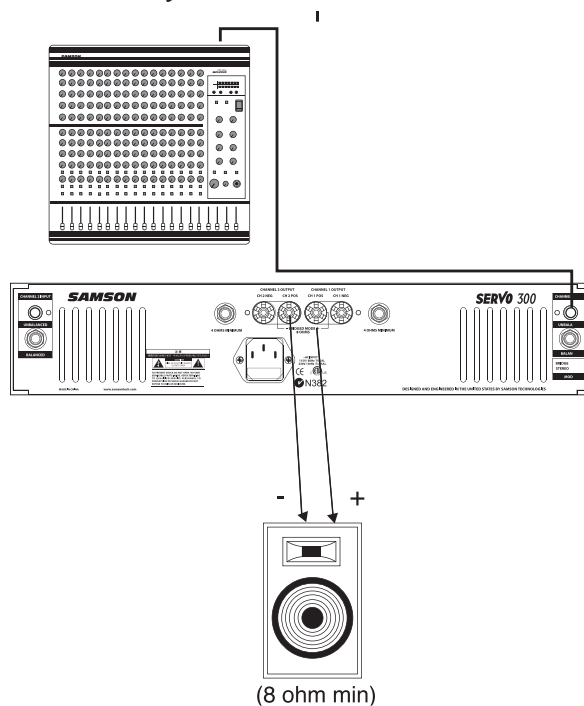
Servo Series Connections

The illustrations on this page show the required interconnections when using the Servo Series in Stereo and Bridged modes.

Stereo Mode: (two or four speakers)



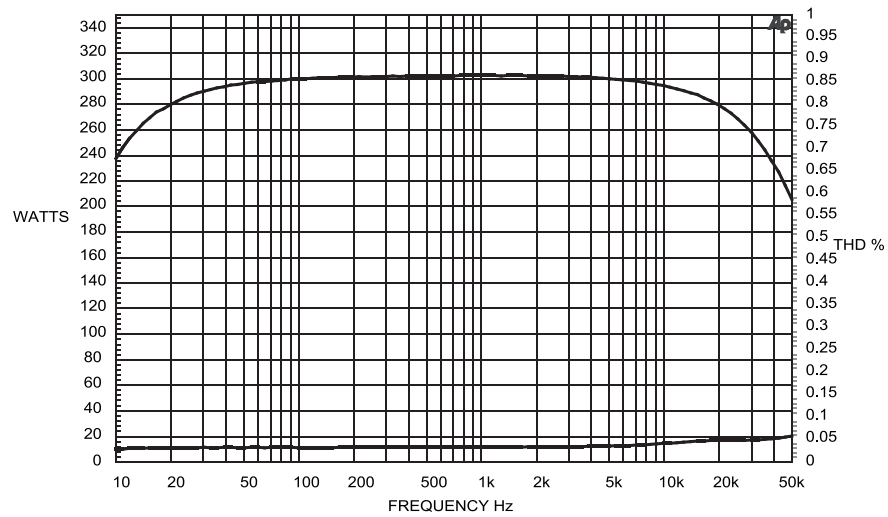
Bridged Mode: (single speaker only)



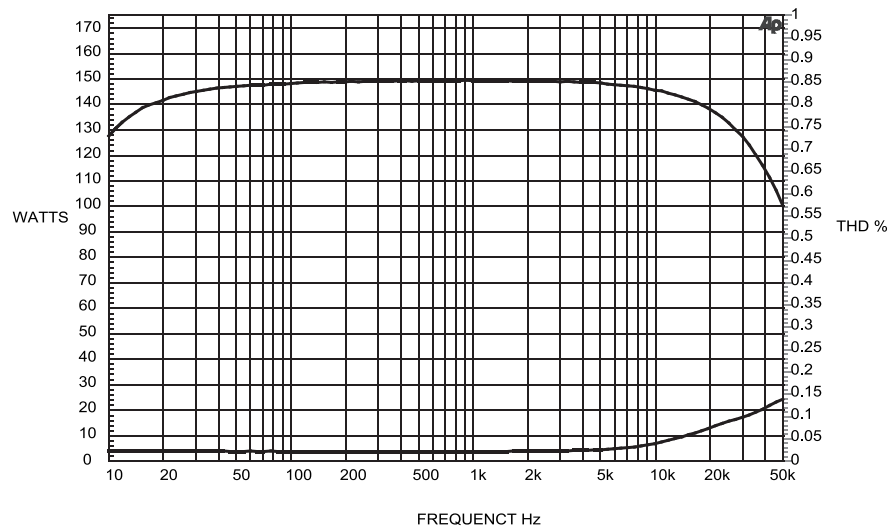
Specifications

	Servo 200	Servo 300	Servo 600
Stereo both channel driven			
8 ohms	66 Watts x 2	100 Watts x 2	225 Watts x 2
4 ohms	100 Watts x 2	150 Watts x 2	300 Watts x 2
Bridged mono			
8 ohms	200 Watts	300 Watts	600 Watts
Signal to Noise Ratio (20Hz-20k)	102dB	102dB	104dB
Distortion(SMPTE-IM)	0.05%	0.01%	0.04%
Input sensitivity @8ohms	1.24V(4dBu)	1.24V(4dBu)	1.24V(4dBu)
Voltage Gain	32dB	33dB	34dB
Output Circuitry	AB	AB	AB
AC Power @1/8 rated power 4ohms, max.	0.5A	0.7A	1.3A
AC Power @1/3 rated power 4ohms, max.	1.1A	1.7A	3.3A
AC Power @ rated power 4ohms, max.	3.3A	5.0A	10A
Distortion(typical @4 ohms)			
20Hz-20kHz,10dB below rated power	0.01%	0.01%	0.03%
1kHz, rated power	0.1%	0.1%	0.1%
Frequency Response @8ohms 1Watt	0/-0.5dB:20Hz-20kHz,0/-3dB:5Hz-60kHz		
Damping Factor(400Hz)	280	280	350
Input Impedance	15kohm Unbalanced,30kohm Balanced		
Input Clipping	10Vrms(22dBu)		
Cooling	Continuously variable speed, fan forced air		
Connectors (each channel)			
Input:	RCA unbalanced and 1/4"(6.3mm)TRS, balanced		
Output:	5-way Binding post and 1/4" Phone		
Controls	AC power switch,Channel 1 and 2 volume		
Indicators	Power on(blue),Protection(amber) Signal(green) for each Ch.,Peak(red) for each Ch. Level: , -24 dB, -20 dB, -16 dB, -12 dB, -8 dB, -4 dB, -2 dB. O, +2 dB and +4 dB (PEAK).		
Protection	Short circuit,Thermal,Current limit,DC offset,Current inrush,RF protection, Turn on/Turn off muting		
Power Requirements	115/230,240VAC,50/60Hz		
Dimensions(WXHXD)	19"(483mm)X3.5"(89mm)X11.7"(297mm)		
Net Weight	15 lbs 6.82 kg	20 lbs 9.09 kg	24 lbs 10.91 kg

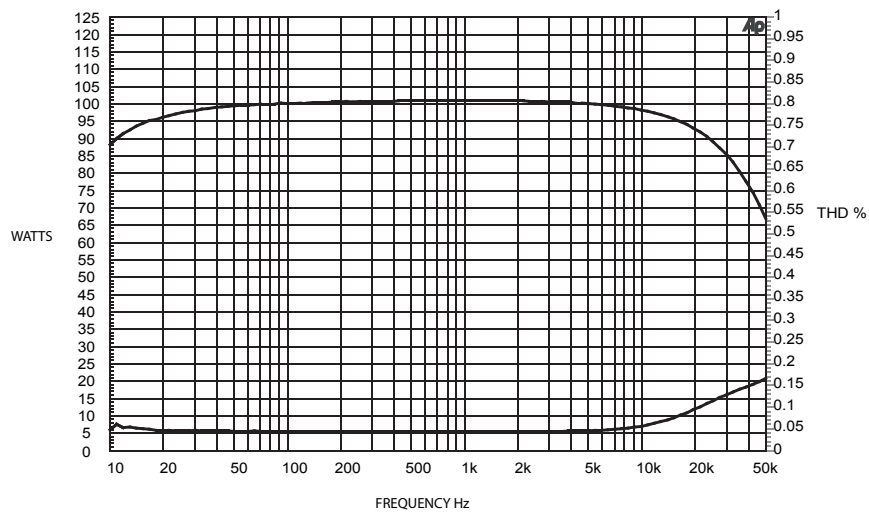
Appendix A: Power Output vs. THD



Servo 600

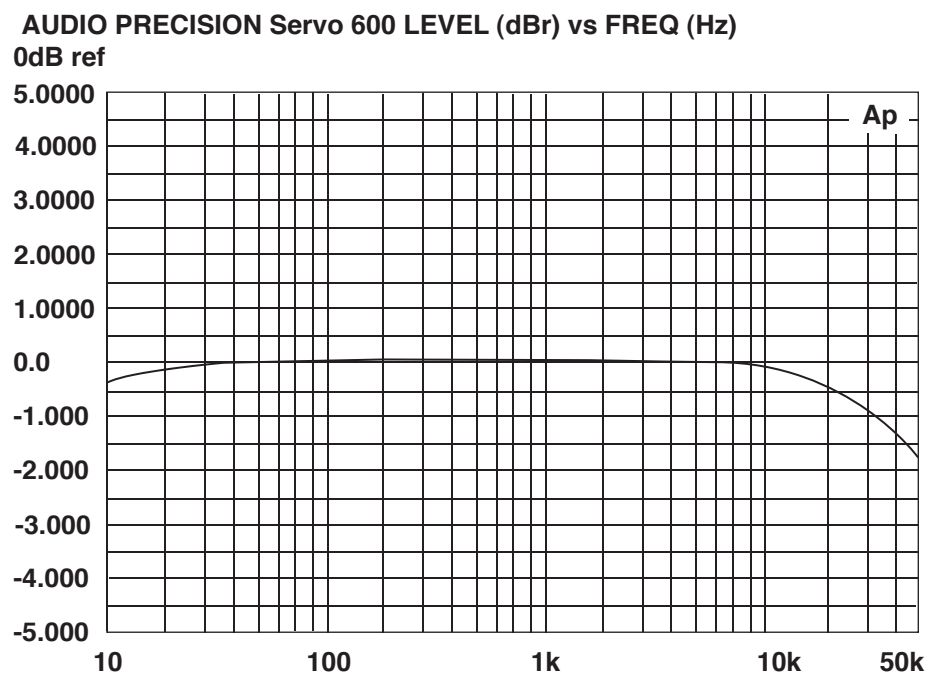


Servo 300



Servo 200

Appendix B: Frequency Response



Linearity (0 dB Ref) vs. Frequency sweep
10 Hz - 50 kHz Typical for all Servo models

Samson Technologies Corp.
575 Underhill Blvd.
P.O. Box 9031
Syosset, NY 11791-9031
Phone: 1-800-3-SAMSON (1-800-372-6766)
Fax: 516-364-3888
www.samsontech.com