



SLP-2002 Stereo Balanced Vacuum Tube Preamplifier

Fully Balanced Vacuum Tube Line Stage Circuit Design
with Cinema Bypass and Remote Volume Control

CARY AUDIO DESIGN
1020 GOODWORTH DRIVE
APEX, NORTH CAROLINA 27539

Congratulations Cary Audiophile!

All of us at Cary Audio thank you for buying an SLP-2002 preamplifier for your home audio system. This design has many innovative features to offer ease of use and superb reproduction of your favorite music.

This preamplifier includes fully balanced vacuum tube circuitry with dual triode 6922 and 5814 tubes. The remote volume control uses an Alps four gang motorized volume potentiometer, chosen for both its intrinsic sound quality and its remote control convenience. We have XLR balanced or RCA unbalanced connections for the Cinema bypass and RCA or XLR inputs for the CD player and the main preamplifier outputs. The circuit uses five fully regulated power supplies. Proper operation of the preamplifier power supply circuits is confirmed by red or green LED's that are mounted on the power supply PCB board, visible through perforations in the top panel.

This is our first balanced circuit preamplifier. As such, we felt we should offer a new way to mix stereo and home theater surround sound systems together. The Cinema bypass input allows this to happen. Connect the main Left and Right outputs from your home theater processor to the Cinema bypass inputs. You can have musical, superb reproduction of your two-channel source material or surround sound from your processor in this way. Connect your CD player to the SLP-2002 for 2 channel stereo playback. We naturally suggest using a Cary Cinema P 8 surround processor due its XLR analog bypass capability for two channel listening! The Cinema Bypass input will pass a signal when the SLP-2002 preamplifier is On or Off, exactly as its' name implies.

For audiophiles with balanced design CD players and power amplifiers, the balanced CD input on the SLP-2002 allows you to have a balanced system, from the input source to the power amplifier. Balanced cables offer excellent shielding from external noise sources, like radio frequency (RFI) interference. In systems where very long runs of cable are needed, balanced operation is the best way to wire a system. Both the CD-303/200 and CD-306/200 offer balanced XLR analog outputs.

In extensive listening tests we have come to admire the sound reproduction capabilities of the 6922 tube. We use it as a driver stage tube in our V-12i and Rocket 88 power amplifiers. Using the 6922 driver and 5814 buffer stage has the added benefit of creating a non-inverting preamplifier design. (6H30, 6CG7 or 6FQ7 tubes could be substituted for the 6922 tubes or 12AU7 tubes for 5814 tubes if you desire.)

We hope you find the extensive input switching, the choice of XLR or RCA inputs and outputs, a tape monitor loop and Cinema bypass to be all you need for complete control in your stereo system. Our designs are famous for quality, durability and musicality. We hope you enjoy the music through your stereo sound system and thank you again for buying a Cary Audio Design preamplifier for your listening pleasure.

Special listening note: The SLP-2002 will need approximately 100 hours of 'burn-in' time to sound its best. A new vacuum tube takes this amount of time to fully settle into its long term operating condition. During the first 100 hours the SLP-2002 will sound good but it will improve in its sonic characteristics as the burn-in period progresses. So, it will initially sound good and it will get better as the first 100 hours of use passes! Enjoy the listening!

INITIAL SET UP OF THE SLP-2002 IN YOUR SYSTEM

The rear panel: When looking at the rear panel of the SLP-2002 you will see the well-spaced, high quality connectors for inputs and outputs. From the left to the right side of the rear panel you will have XLR or RCA input connectors for your CD player. Next on the panel is the XLR or RCA input set for AUX 1. The Inputs for AUX 2, AUX 3 and AUX 4 use RCA connectors exclusively, as does the Tape Monitor loop. The Cinema bypass uses XLR or RCA input connections. The main preamplifier outputs are XLR and RCA sets, with two sets of RCA outputs. The main power fuse holder and an IEC standard AC power cable connector are the remaining features of the rear panel.

We chose to offer XLR and RCA inputs for the main source components so that music lovers have more choice in matching the SLP-2002 with other high performance audio components. The SLP-2002 is a true balanced design with four line stages, from input to output and offers superb sound in a balanced system. We suggest using a Cary Audio Design CD player for a balanced input source, of course! Our CD-303/200 or CD-306/200 CD players would match up with this preamplifier very well. Both CD players have balanced output connections and would make the most of your sound system.

The dual RCA outputs are convenient for you if you want to use a powered sub woofer with your main speakers. Connect one set of RCA output connections to your power amplifier and the other set to the self powered sub woofer's input connections. Adjusting the variable volume control on your sub woofer can attain level matching between the main speakers and the sub woofer. Or you can use a second power amplifier and run music somewhere else in the house from the second set of main RCA outputs. Bi-Amp operation with two power amplifiers driving a single pair of speakers through direct speaker cable connections to the separate woofer and tweeter terminals on the speakers is also possible with dual RCA preamplifier outputs.

We suggest that you choose excellent quality patch cables, with good ground shielding, for your system. Wire quality does matter and careful selection of wire for your system is something we recommend to maximize your listening enjoyment. Ask your Cary Audio Design dealer for advice about system wiring for your stereo sound system.

The front panel: From left to right: AC Power switch, Mute/Operate switch, Cinema Bypass switch, Volume (Listening Level) control, Input Selector, Tape Monitor and Headphone Off/On switch. Each switch has an LED next to it to confirm operation or its selection as a function; the only exception being the Input Selector. The Volume control shows operation by flashing an LED while it is rotating. This visually confirms proper operation, as does the obvious change in volume level through the speakers or headphones.

SLP-2002 Design Features: The headphone jack is driven by the buffer stage 5814 tubes through specially chosen audio grade transformers. These audio grade transformers were included so that the sound quality of the SLP-2002 would be preserved and offered to headphone lovers. Headphones may be used with or without having the power amplifier and speakers turned on. If you have very efficient speakers and inefficient headphones, it may be necessary to turn off the power amp to avoid excessive 'in room' loudness. The 6922 driver tubes are *direct coupled* to the 5814 buffer stage tubes for the best sound and drive capability in this preamplifier. With the 5814 tubes driving the headphone transformers, the result is a glorious sounding headphone driver circuit.

The SLP-2002 power supply has five fully regulated stages for the B+, the tube filaments and the control systems related to the volume control. The volume control is a four-gang ALPS potentiometer. This four-gang design is needed due to the truly balanced design of the four line stages in the preamplifier.

The Remote Control Handset: Please insert the AAA batteries into the handset, aligning the positive and negative terminals to ensure the remote control functions properly. The handset flashes a small red LED to confirm it is working. If you push a button and the red LED is not flashing it indicates that the batteries are depleted. Change to new batteries and your remote control will work again. The remote control handset has Volume control Up or Down and muting On or Off.

If you engage the mute circuit the SLP-2002 output circuit is muted. **However, the remote handset will still operate the volume control circuit.** Please be careful not to turn up the volume to a high level and then turn the mute off on the SLP-2002. The subsequent high volume level signal might startle you or possibly damage your speakers if it is set at too loud a level.

Specifications for the SLP-2002

Regular Inputs: Five source components, 2 XLR or RCA, 3 RCA only connection

Extra Input: Cinema bypass XLR or RCA connection

Circuit design: Fully balanced, 4 separate line gain stages, Class A triode operation

Frequency Response:	9 Hz – 70 kHz +/- 3 dB
Total Harmonic distortion:	<0.1 % @ 2 volts output
Intermodulation distortion:	<0.1 % @ 2 volts output
Signal to Noise Ratio (A-weighted):	≤ 80 dB below full output
Rated output voltage:	2 volts
Maximum output voltage:	15 volts
Overall gain:	20 dB
Tube complement:	(2) 6922 Gain stage (2) 5814 Low impedance buffer
Dimensions, H x W x D Inches/Millimeters:	~5" x 17.5" x 15" / ~127 x 381 x 324
Weight, Pounds/Kilograms:	~25-lb / ~11.4 kg
Power Consumption:	75 watts
Voltage:	110-120/220-240 VAC, 50/60 Hz

SAFETY WARNING: Vacuum tube circuits need high voltage to work properly. **Please do not open the cabinet of the SLP-2002 while the preamplifier is on or plugged into an AC power supply.** Even when it is unplugged there is high voltage present in the circuitry, stored by the capacitors on the main circuit board. Please do not install the SLP-2002 where moisture or condensation will fall on it. We recommend any service to be performed by your Cary Audio dealer. If any liquid enters into the preamplifier unplug it immediately and do not plug it in again until any and all liquid has been removed and the interior of the preamplifier is dry.



Cary Audio Design
1020 Goodworth Drive
Apex, North Carolina 27539

Tel: 919-355-0010

Fax: 919-355-0013

E-mail: info@caryaudio.com

<http://www.caryaudio.com>

SYSTEM TROUBLESHOOTING HINTS

NO POWER

IS THE AC CORD CONNECTED TO A SWITCHED AC OUTLET?
IS THE SWITCHED AC OUTLET TURNED ON?
CHECK THE POWER FUSE FOR THE AC OUTLET.

NO SOUND

CORRECT INPUT SELECTED? IS THE AMPLIFIER
TURNED ON? IS THE SOURCE COMPONENT TURNED ON?
IS THE SOURCE COMPONENT CONNECTED PROPERLY?
ARE THE SPEAKER WIRES CONNECTED PROPERLY?

NO BASS

IS THE SUBWOOFER AMPLIFIER TURNED ON?
IS THE POWERED SUBWOOFER TURNED ON?
ARE THE "WOOFERS" IN YOUR SPEAKERS DAMAGED?
ARE THE SPEAKERS WIRED CORRECTLY?

POOR TRACKING (CD, DVD PLAYER)

IS THE DISC DIRTY OR SCRATCHED? IS THE DISC
SEVERELY WARPED? IS THE DISC SEMI-TRANSPARENT OR
POORLY MADE WITH VISIBLE "PIN" HOLES?

POOR, DULL SOUND WOW & FLUTTER (TAPE DECK)

ARE THE HEADS DIRTY? HEADS MAGNETIZED FROM LONG
USAGE WITHOUT DEMAGNETIZING? ARE THE PINCH
ROLLER AND THE CAPSTAN DIRTY? CLEAN WITH PURE
ALCOHOL, "Q" TIP COTTON BUDS OR A TAPE DECK
CLEANING KIT. DEMAGNETIZE THE HEADS WITH A HAND
HELD DEMAGNETIZER. DO NOT USE ABRASIVE DRY CLEANERS!

DISTORTED BASS OVERLOADING SMALL SPEAKERS?
TOO LOUD VOLUME "CLIPPING" YOUR AMPLIFIER?
DAMAGED WOOFERS IN YOUR SUB OR MAIN SPEAKERS?

"HUM" IN SYSTEM AC CORD, VIDEO, DIGITAL AND AUDIO CABLES TOUCHING?
THE AC CORD SHOULD BE SEPARATE FROM SIGNAL CABLES
SIGNAL CABLES LAYING NEAR A LARGE POWER
TRANSFORMER, SUCH AS IN A POWER AMPLIFIER?
DEFECTIVE OR UNSHIELDED SIGNAL CABLES?
GROUND LOOP? USE A 3 TO 2 CHEATER PLUG TO 'LIFT' THE GROUND.

OVERHEATING IS A COMPONENT STACKED ON THE AMPLIFIER?
IS THE AMPLIFIER ENCLOSED IN A SMALL SPACE? A
MINIMUM OF 3 TO 4" (~8-10 CM) CLEARANCE IS NEEDED
ABOVE THE AMPLIFIER IN A SYSTEM. DO NOT STACK
COMPONENTS ON THE AMPLIFIER. AN AMPLIFIER NEEDS TO
"BREATHE" FREELY TO STAY COOL.

**POOR RECEPTION
(FM RADIO)** IS THE ANTENNA CONNECTED PROPERLY? IS THE
ANTENNA MOUNTED AS HIGH AS POSSIBLE? IS THE
ANTENNA ORIENTED FOR BEST RECEPTION? IS THE FM
STATION DISTANT? AN OUTDOOR ANTENNA MAY BE
NECESSARY. ADJUST THE ANTENNA FOR BEST RECEPTION.

**NOISY RECEPTION
(AM RADIO)** IS THE ANTENNA CONNECTED PROPERLY? IS THERE A
LARGE ELECTRICAL MOTOR, COMPUTER OR COMPRESSOR
NEAR THE TUNER OR ANTENNA? NOISE IS EASILY RECEIVED
IN THE AM BAND. ADJUST THE AM ANTENNA FOR BEST
RECEPTION AND MINIMUM INTERFERENCE.

Below are photos of the Cary Audio Design V-12 stereo (left) and mono (right) power amplifiers. Both amplifiers are an excellent match to the SLP-2002 preamplifier.



The V-12 stereo amplifier is rated 50 watts/channel in triode mode. The V-12 Mono is rated at 100 watts in triode mode. Both power amplifiers double their output power in the ultralinear mode. Each offers output from 4 or 8-ohm speaker terminals. Both have balanced or RCA inputs and use audiophile quality connections on the rear panel for input selection, XLR or RCA connections and for the speaker output terminals.