# Owner's Manual

Herron Audio

## HL-1

Solid-State
Stereo Preamplifier

## Table of Contents




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## Welcome!

Thank you for your investment in the Herron Audio HL-1 Solid State Stereo Preamplifier, a milestone in high-precision audio playback equipment. The HL-1 is a new design, benefiting from insights gained during continuous refinement of the highly-praised and award-winning VTSP-1A vacuum tube preamplifier. The HL-1 employs the latest advancements in semiconductor technology incorporated in a way that produces totally natural and transparent sound.

The care in engineering and manufacturing of this product anticipates a lifetime of musical enjoyment. Years of research into circuit design and component performance were applied to the development of the HL-1, and new implementations of components have led to a breakthrough in performance while maintaining conservative operation. As with all Herron Audio products, the HL-1 is engineered to be reliable and user friendly.

Manufacturing of the HL-1 is performed under the tightest of quality controls. Its limited production permits hand matching of components to the most exacting standards in the industry. The units are burned in, bench tested, and matched to extremely tight tolerances to ensure unprecedented performance and lack of unit-to-unit variation.

**Please read the Owner's Manual completely BEFORE operating the unit.**

## Features

The HL-1 incorporates an infrared remote control for convenient operation of many of the preamplifier's front-panel functions. This remote uses 38kHz modulation and detection of this signal initiates the HL-1's decoder circuitry, which is otherwise dormant in order to prevent the unwanted noise usually associated with remote control circuitry. A flashing red light in the display window indicates the initiation of the remote control decoding process in the HL-1. When the red light is off, this circuitry goes to "sleep" mode.

The HL-1 utilizes two extremely low distortion precision electronic stepped attenuators (one for each channel) in a fashion similar to the VTSP-1A/166, with downshifting starting at step 40 (a slight pause may be detected as the unit changes modes between steps 39 and 40). The HL-1 has a total of 100 volume steps, and the precise volume level is shown as three digits in the front-panel display window. The use of electronic stepped attenuators ensures continued high-quality performance without any of the oxidation and corrosion that degrades conventional mechanical stepped attenuators and volume control potentiometer wiper contacts.

At startup, the display on the HL-1 goes through a lamp test, and then successively displays the model of the unit "HL1," phono stage option "PH1" (if present), the revision of the unit, "r01," and the time in seconds from 30 until the unit automatically unmutes. The input display will show the last input in use from the last time the unit was on. When the countdown is complete, the mute will be disengaged (if it was not on the last time the unit was shut down), the function displays will indicate the last state of use, and the volume will be ramped up to a relatively low level of 10. At this point the user will be able to change the settings.

The HL-1 incorporates circuitry to switch the phase of the audio signal by 180 degrees for absolute polarity control. The amber **"Invert" light** on the front panel will indicate if the phase is being inverted. The phase switching circuitry of the HL-1 is designed so that no coloration is added in either mode, and the true effects of recorded phase polarity are audible in either mode. The invert mode can be controlled from both the front panel and the remote control.

NOTE: When the invert mode of the HL-1 is switched, the unit automatically mutes before changing modes in order to prevent any unwanted "pops" during switching. The unit unmutes after the invert mode is changed. The process takes 0.5 seconds.

The display brightness of the HL-1 can be dimmed from both the remote and the front panel by pushing the **"Display" button.** Operating the "Display" button again will return the brightness to its previous setting. The blue "Display" indicator on the front panel indicates dim-display mode.

Source input selection in the HL-1 incorporates gold-contact sealed relays located at the input connectors, keeping the signal path length to an absolute minimum. This innovative configuration eliminates the distortion-generating wipers of conventional selectors and long runs of wire from the rear panel to the switch. An additional benefit of using sealed relays, the contacts are not prone to corrosion, dirt, or the same kind of wear as conventional selector switches.

The HL-1 has a power-polarity switch on the back panel for reversing the power line polarity connection to the primary of the power transformer. This can be used to minimize the capacitive reactance effects from the power line on the audio circuitry of the unit. This switch can be operated while listening in order to determine the best-sounding power polarity setting.

The **"Video" input** of the HL-1 can be placed in unity-gain mode by pressing and holding the "Video" button on the front panel for a few seconds. The volume display will indicate **"PAS"** on the display when the pass-through mode is initiated; only the video input will be at unity gain. Selecting any other input will shut off the pass-through mode, and the volume will return to 10.

**NOTE: The pass-through mode cannot be selected from the remote control**.

All of the front panel display lamps are driven from individual display latches for each element and are

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not multiplexed or flashed at high speed, as is usually done to save parts and cost. The continuous lighting of each selected element of the display of the HL-1 prevents the electrical noise that would be generated by sequenced displays.

The HL-1 has an instant shutdown circuit that mutes the output upon loss of full line voltage (power loss). This feature provides protection from loud "pops" or noises from input equipment that may damage speakers. With a power loss of more than a few seconds, the unit will totally shut down, and go through the full start-up sequence when power is restored. If the power outage is brief, the unit will mute and wait 10 to 15 seconds to unmute when the power is restored. This delay will allow DC signals from input components enough time to normalize so that loud "pops" will be minimized.

## Design Considerations

- Multifunction remote control
- Volume level display (0 - 100)
- Unity gain pass-through function—initiated by holding video button
- Optional phono stage with switchable MM/MC modes
- Non-multiplexed display, eliminating radio and audio interference
- Switchable absolute polarity
- 100-step electronic volume control system with precision tracking and low distortion
- Full-range, infinite-resolution indirect signal path balance control
- Stereo/mono switch
- Mute control
- Display brightness control
- Tape out/in loop
- Low noise design
- High input-signal capacity without overload
- Automatic muting at startup and shutdown
- Gold plated, Teflon-insulated RCA connectors
- Handpicked components for accurate response and consistent unit-to-unit quality
- Reversing power line (AC) polarity switch for minimizing line-to-chassis reactive currents and noise pickup
- Each unit is given an extensive burn-in, including rigorous bench and listening tests

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## Front Panel Features


Three-digit volume level display in the display window at the center of the front panel indicates the volume level (0 to 100) and the parameters of the unit during start-up. It also indicates **"PAS"** during pass-through mode and the gain state of the optional phono stage "coil" (moving coil) or "MM" (moving magnet) if present.

The selected input is indicated by the blue lights on the left side of the front panel.

These inputs are:

- **Phono**
- **Aux**
- **CD**
- **Tuner**
- **Video**

***Units with the optional phono stage:*** *The MM/MC mode can be changed by holding the phono button on the front panel in for a few seconds. The unit will mute and the display will show the mode that has been selected for 10 seconds and then count down for 20 seconds before un-muting. The MM/MC mode cannot be changed from the remote control.*

The **tape input** (loop) indicator is on the right side of the front panel.

These inputs can be selected from either the front panel or the remote control after the unit has gone through the start-up sequence.

The **balance control** provides a full range of adjustment for relative balance between the right and left channels. In the centered position, each channel is equal in signal sensitivity. Rotating the balance control in the clockwise direction (to the right) decreases the volume in the left channel relative to the right channel. Rotating the balance control in a counter-clockwise direction (to the left) decreases the volume in the right channel relative to the left. In the fully clockwise or counter-clockwise position, the left or right channel respectively will be muted. Normal operation is provided when the balance control is in the centered position. The **"Balance" knob** operates an infinitely variable control that is barely in the circuit at center position.

**NOTE: The balance control cannot be operated from the remote.**

The **"Volume" knob** operates a stepped encoder. Rotating the volume knob to the right increases the volume level, or to the left to decrease the volume level. The level is displayed from 0 to 100 in the display window. The volume can also be controlled from the remote control.

NOTE: Since the volume control is a stepped attenuator the individual steps of the volume control as it is raised or lowered may produce "clicks" for a short period after the unit, or input device has been turned on. This will be most noticeable between steps 39 and 40. These "clicks" are the result of a D.C. voltage at the input of the unit causing instantaneous D.C. level shifts as the volume control steps up or down. This condition will usually subside after a few minutes as the D.C. level at the input from the source component dissipates.

The **red "Mute" light** indicates that the preamplifier is in mute mode and no signal will pass through the unit. During mute, the stepped attenuators are set to zero level and the output is shorted by a relay. The mute mode can be initiated or disengaged from the front panel or the remote control.

The **orange "Mono" light** indicates that the preamplifier is in monaural mode. In mono mode, the unit mixes the left and right signals to monaural so that the signals coming from the left and right channels are the same. Mono mode can be initiated or disengaged from the front panel or the remote control.

The **amber "Invert" light** indicates that the preamplifier is in phase-inverting mode. The invert mode reverses the absolute phase of both channels. The invert mode can be initiated or disengaged from the front panel or the remote control.

The **amber "Tape" light** indicates that the tape input has been selected. The tape input allows the user to loop the selected input (source) signal out from the tape output through a tape machine or other processor, and listen to the signal coming back into the tape input. The tape input mode can be initiated or disengaged from the front panel or the remote control.

The **blue "Display" light** indicates that the front panel displays are in dim mode. The display mode can be initiated or disengaged from the front panel or the remote control.

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## The Remote Control

Remote control functions:

- Input Selection
- Absolute Polarity
- Display Brightness
- Volume, Mute, and Mono/Stereo

The remote control is laid out in a fashion similar to the front panel of the HL-1.

The input controls are on the left side (top to bottom) in the following order:

- **Phono**
- **Aux**
- **CD**
- **Tuner**
- **Video**

The volume is controlled with the two white buttons at the top center of the remote. The **V**− button on the left decreases the volume. The **V**+ button on the right increases the volume.

The controls on the right side of the remote (top to bottom) are in the same order as the front panel:

- **Mute**
- **Mono**
- **Invert**
- **Tape**
- **Display**


**NOTE: The balance control cannot be operated from the remote control.**

The remote control will only control the unit if the top of the remote is pointed toward the display window of the HL-1. The remote control uses 2 CR2025 3-volt lithium batteries.

NOTE: the + indicator on the batteries must be facing the back side of the remote. Installing the batteries in the wrong direction may damage the remote control.

## Rear Panel Features


The rear panel was designed for flexibility and ease of access to less-frequently used functions. The high-precision RCA input jacks are gold-plated to minimize signal-degrading corrosion. The special Teflon insulation material in the RCA connectors maintains purity of the signal from the input cable into the unit.

### Power Connection

An IEC power cord connector is provided for attaching either the factory-provided power cord or another chosen by the user.

### Power Switch

When the unit's POWER switch is placed in the on ("1") position, the unit is powered up. At power up, the unit is automatically muted until full operational capabilities are reached and the voltages are stable at the tubes. When switch is moved to the off position, the unit is automatically muted and powered down.

### Power Line Polarity Switch

This switch selects the power-line polarity. AC line polarity may affect performance. The following is the recommended procedure for determining the best operation:

- With the mute engaged set the power line polarity switch to the "A" position then disengage the mute.
- Set the volume control to the desired level and listen closely to the quality of the reproduction. This will be used as a baseline for determining AC polarity.
- Engage the mute function and change the AC polarity of the preamplifier by switching the

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power line polarity switch to the "B" position then disengage the mute for listening. Repeat the process, listening to the same source.

- Place the AC polarity switch in the position that sounds best. It may be necessary to change the AC polarity if you make other equipment or power connection changes in your audio system.

Note: The AC polarity switch should only be operated with the unit muted

### Inputs

The inputs are grouped by channel: the upper bank contains the left-channel inputs, the lower contains the right-channel inputs. The left/right input pairs are arranged vertically. The input pairs are arranged on the back in the same order as on the front panel and remote (with the exception of the tape loop input).

RCA input plugs should be inserted firmly into the input jacks while the unit is powered down. Any individual ground-bleed connections should be connected to the gold ground lug located near the end of the banks of input jacks.

### Outputs

There are two types of outputs in the HL-1. The main outputs are intended for connection to high-quality power amplifiers or a multi-channel electronic crossover. Two pairs of main outputs are provided so that users may distribute the audio signal to multiple amplifiers.

The tape outputs are provided to allow monitoring of the selected audio signal after the input relays. The signal from the tape output corresponds to the input chosen by the user and displayed on the front panel.





# Installation and Operation

Operation of the Herron HL-1 stereo preamplifier is straightforward. As with any fine audio component, careful setup and integration into one's system is important for optimum performance, safety, and reliability. Please read through the following setup instructions completely prior to operating the unit.

### Procedure

1. Position the unit in a **well-ventilated** area on a firm, stable surface, away from equipment that generates alternating magnetic fields such as motors, transformers, etc. Magnetic fields of this type can introduce hum into the signal path.
   **Good ventilation is important in order to prevent overheating of the unit. Excess heat will shorten the life of the unit.**
2. Connect the signal cables from the source components (CD, turntable, VCR, tuner, etc.) to the HL-1's rear panel jacks, left-to-left and right-to-right. Connect any ground bleed wires to the ground connector of the turntable.
3. Plug the amplifier and tape recorder input cables into the corresponding outputs, left-to-left and right-to-right.
4. Plug the power cord into the IEC socket. Make sure it is firmly seated prior to inserting the plug into an AC outlet.
5. Plug the power cord into a 115-volt (U.S. spec units) AC outlet.
6. Power up the source components.
7. Power up the HL-1 by switching on the power switch.
8. Once the HL-1 is powered up and operating, power up the downstream amplifier(s) and crossover, if any, as recommended by their manufacturers.
9. With the Volume control in the lowest position, gradually increase the gain until the desired level is reached.
10. When the listening session is complete, it is suggested, but not required, that the HL-1 be

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powered down after the crossover, amplifiers, and tape recorder, and before the source components.

### Power Requirements

It is recommended that the HL-1 stereo preamplifier be connected to the same power source (dedicated circuit) as the other source components (phono stage, turntable, CD player, SACD player, etc.) and power amplifiers in the audio system. This will reduce the component-to-component differential RFI (radio frequency interference) level that will be required to be conducted by the audio interconnects, which are a very important part of the audio chain. RFI can add brightness and lack of clarity to an audio system.

With the higher definition and detail available through the HL-1, careful attention to the setup of other components will yield significant benefits. There may also be considerable gains from the upgrade of existing electronics.

We recommend the use of high-quality interconnecting cables between the source components and the HL-1, and between the HL-1 and components downstream of it (the power amplifiers and speakers).

Due to the increased definition of detail, it may be necessary to make minor adjustments in speaker position or active crossover settings to optimize their performance. We have determined that minor time alignment changes in a setup can produce major advances in the overall quality of the reproduced signal, bringing the listener closer to the original performance.

## Technical Specifications

| | |
|---|---|
| **Frequency response:** | 1 Hz to beyond 100 kHz,<br>20 Hz to 20 kHz +/- 0.1 dB |
| **Output Impedance:** | 250 ohms nominal at 1 kHz (predominantly complex/imaginary-passive) |
| **Input impedance:** | 100,000 Ohms |
| **Gain:** | 14 db |
| **Volume Control:** | 100-position electronic stepped attenuator, maximum differential 0.1 dB channel to channel |
| **Absolute Polarity:** | Switchable |
| **Front Panel:** | Available in black or clear anodized aluminum |
| **Dimensions:** | 18" wide x 3.5" high x 10.5" deep |

**Optional Phono Stage:**

| | |
|---|---|
| **Gain:** | MM 44dB, MC 64dB |
| **Input Impedance:** | MM 47K Ohms, MC 47K Ohms |

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| **Warranty:** | 3 years, parts and labor |

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