OWNER'S MANUAL

The Director
Line Preamp

The Director

The Director's basic circuitry and design concept are refinements of years of expertise in high-end preamplifier manufacturing. Throughout its design, Ron Sutherland repeatedly bench marked The Director's performance to "cost-no-object" options. The design was not complete until The Director could stand proudly among such Sutherland smash hits as the Ph.D. and AcousTech PH-1P phono preamplifiers. We are pleased to make this contribution to your enjoyment of recorded music.

FEATURES

The Director fulfills the basic preamplifier functions of: **Input Selection, Volume Adjustment & Gain.** But with The Director, those functions are entirely unique and refined.

Let's take a closer look:

Input Selection

Traditional input selection is based upon naming each input on the front panel and then associating that name with back panel labeling. But there's a very good chance that the labeling will not match an individual's particular system requirements. And memorizing that, for example, the phono is associated with the AUX 2 label is certainly a less than elegant solution.

Some computer-based preamplifiers let the user assign alphanumeric names to each set of input jacks. While this fixes the misnaming problem, the alphanumeric display requires a constant scanning update, creating a very intrusive high-frequency buzz. By our standards, that is totally unacceptable.

With The Director, there's no need to even label the inputs. When a musical signal is detected at an input on The Director, the selector automatically routes that signal into the preamplifier. So, to listen to CD, hit the "play" button on your CD player. To listen to LPs, just stop the CD player and start up your turntable. As soon as the stylus touches the groove, The Director will recognize that you want to listen to LPs. Furthermore, the volume level will automatically set to the value last used when listening to records. If more than one input is active, the conflict is indicated on the four discrete input LEDs. They will toggle between the active inputs, indicating the need to shut down all but the desired input. Also, as soon as a signal for any source is detected, that signal detector is disabled. If it weren't, the signal detector would add digital noise to the preamplifier environment. Simple and noise-free – that's The Director.

Volume Adjustment

The most popular volume control chips on the market are laden with features but short on musicality. Most contain mediocre op amps and analog circuitry squeezed onto a chip full of digital circuitry. Fine for home theater or car stereo, but not appropriate for high-end goals. The Director uses a basic attenuator function that consists of only j-fet switches and a precision resistor ladder. It has proven to be sonically neutral with low noise and has excellent channel-to-channel matching. It is consistent with the simplified signal path philosophy that drives all Sutherland Engineering designs.

Rather than the ordinary digital volume display with its noisy multiplexing problems, The Director uses a 16 LED bar graph to indicate volume level. Musicality takes precedence over marginally useful digital minutia. There are a total of 128 volume settings available on The Director, giving a volume control range of 78 db. Volume changes are smooth and click-free.

Gain

At the heart of any preamplifier is the gain stage. Any deficiencies here will negate all the effort and expense of getting everything else right. From the beginning of The Director, we established top-level performance goals. It had to be open, effortless and have a dynamic, explosive punch. Those goals could not be met with op amp based gain stages. We developed a gain stage using all discrete transistors. Hermetically sealed dual j-fets are used in the input stage, followed by bipolar gain stages and a class-A push-pull bipolar output stage. All bias currents are appropriately high to maintain a dynamic reserve. Extensive use of a high-capacity, low-impedance power supply reservoir contributes to the effortless, unstrained sonic signature of The Director.

Power Supply

The Power supply is the foundation that supports all the other circuitry. If it is not right, not perfectly clean and stable, everything depending on it will be compromised.

We acquired a great deal of experience from the design and refinement of the Ph.D. phono preamplifier. In that design, using alkaline batteries allowed for total AC power line isolation. The results were spectacular and reinforced the importance of a clean power source. Because of that success, we initially planned on creating a battery-powered line stage. While the performance of such a prototype was very good, it didn't quite stand up to the cost-no-object standards that we wanted The Director to meet. We needed a higher-power-consuming circuit topology to achieve effortlessly explosive dynamics. It was decided to incorporate the high bias current discrete circuit and then work on the power supply.

We determined that the conventional approach of using a voltage regulator for isolation from the AC power line would not meet our design goals. Its output was still too close to the noise on the AC power line. We instead chose to use an active constant-current regulator followed by multiple layers of passive pi RC filters. The constant-current regulator gave very high impedance isolation from the AC power line. In this case, high impedance is very desirable as it represents the electrical "distance" from the AC power line. However, the active preamplifier circuit requires a low-impedance power source. A low impedance gives the circuit direct and quick access to power. The original high impedance current source is transitioned to a low impedance voltage source using a shunt voltage regulator. This combination of an active, high impedance current source, passive pi RC filtering, followed by a low impedance shunt voltage regulator gave us the electrical (and sonic) equivalent of battery power.

USING YOUR DIRECTOR

Remote Control

The upper row of two buttons controls the volume. The left button reduces the volume. The right button increases the volume. The volume LED bar on The Director will move left or right to indicate a response to the remote control signal.

The lower row of two buttons controls muting. The left button mutes the audio. When the mute signal is received, the volume LED bar on The Director will quickly move all the way to the left. A flashing volume LED indicator will then indicate the stored volume level. The right button restores the volume level. The volume level will quickly ramp up to restore the previous listening level.

Optimizing Gain On Each Input

Although there are standard recommended voltage levels for line-level sources, not all manufacturers comply with those standards. In particular, some products have a VERY elevated output voltage level. They hope their product will be perceived as "more powerful" or just "bigger." In reality, the only thing that can be done with a large input signal is to attenuate it until it is brought in line with standards. To accommodate the wide range of input levels that might be encountered, each of the four line-level inputs of The Director can be individually configured.

The Director is shipped with all four inputs configured for standard input voltage levels. When configured DIRECT, the maximum input voltage before clipping is 3 volts rms.

When sourced from components with a higher line-out voltage, the inputs associated with that source should be configured ATTN. When configured ATTN, the maximum input voltage before clipping is 18 volts rms.

Configuration is easily set by moving the red, gold-plated shunt connectors located near each pair of input jacks to the appropriate setting. On the circuit board are silk-screened legends showing the configuration settings.

Unity Gain

The Director is well suited for inclusion in multichannel systems. In such systems, The Director would control the front two channels of audio. Two-channel music sources go to the line-level inputs of The Director. A multichannel controller would handle multichannel sources. Its two front channel line outputs would then go to one of The Director's line level inputs. That input would then be assigned a unity gain. When listening to a multichannel source, The Director will automatically sense the signal coming from the multichannel controller and then pass that signal straight through with unity gain.

Assigning Unity Gain

Send a signal to The Director from the multichannel controller. When it is detected, The Director will indicate the selection of that input by lighting the amber LED associated with that input.

Program that input as unity gain by pressing the volume-up button on the remote control and, while still holding the volume-up button, turn the volume knob clockwise.

When an input has been assigned as having unity gain, the volume controls on the remote and the volume knob on the unit will have no effect. If volume control commands are sent, the unity gain input LED will blink.

Restoring Variable Gain

Send a signal to The Director on the input to be restored. When it is detected, The Director will indicate the selection of that input by lighting up the amber LED associated with that input.

Program that input as variable gain by pressing the volume-down button on the remote control and, while still holding the volume-down button, turn the volume knob counter-clockwise.

Display Brightness

The brightness of The Director's display is user-adjustable. The control is on the bottom of The Director, at the center of the front of the unit. There is a space between the front panel and main chassis frame where you'll find a small thumb-wheel knob mounted on the front panel circuit board. Turn the knob to adjust the brightness of your display. Do not be forceful with the knob.

Note: All voltages on this board are very low, so there is no risk of shock. An input must be selected for the brightness control to be sensed, i.e. a yellow light must be on.

QUALITY OF CONSTRUCTION

Machined Aluminum Front Panel
- Aircraft grade 6061 aluminum
- Precision grained and clear anodized

Ball bearing mount of control knob
- Custom machined control knob
- Silky-smooth feel "forever"
- Extremely robust

Steel cover and case
- Heavy 12 gauge (1/8" thick)
- Extreme magnetic and electrostatic shielding
- Durable powder coated epoxy finish

Gold plated, Teflon dielectric RCA connectors
- Musically truthful
- Reliable, robust

Vishay/Dale resistors
- 1% tolerance
- Industrial grade
- Color-banded version of Military RN55
- Environmentally sealed with conformal, protective epoxy
- Controlled temperature coefficient
- Low voltage coefficient
- Excellent high-frequency characteristics
- Low noise
- Fire cleaned, high purity ceramic core
- Laser trimmed nickel chrome alloy element

Wima capacitors
- Polypropylene dielectric for lowest dielectric absorption
- Rugged, reliable potted construction
- Established reliability
- Made in West Germany

Socket ICs
- Each pin of an IC is grabbed by 4 gold-plated beryllium-copper fingers
- Each contact is loaded into a precision-machined shell
- High contact force
- Easy replacement of ICs without risk of board damage

Circuit board
- Environmentally stable FR4 fiberglass substrate
- Ground plane pours on both sides of board establish a stable ground reference, as well as electrostatic shielding

Torroidal power transformer
- Low radiated magnetic field
- Encapsulated in epoxy for rugged environmental protection
- Dual primary for 120/240 volt operation

A BIT MORE ABOUT YOUR DIRECTOR

The Director is retailing for $3,000. Yet, we know that it competes sonically with cost-no-object designs. So, how is this possible?

In many of the expensive high-end preamplifiers you will see extravagantly machined cases that contribute nothing to sound quality. The Director is encased in a very robust, epoxy-powder coated 12-gauge steel case and a machined aluminum panel. The machined knob turns in a large steel ball bearing. This is all first-class material, but with The Director you're not paying for extra (and unnecessary) jewelry.

Without solid engineering, even the most expensive components will not make a great sounding preamplifier. The Director is based upon a solid technical foundation. It is a no-nonsense, focused design, and it is not based on tweaking exotic and problematic components.

The power cord supplied with The Director is a "cheapie." It is plenty adequate, but some users may want to upgrade the power cord. We decided to keep the cost of high-end power cords out of The Director's retail price and instead let the customer make that decision.

The Director's remote control is not the kind of machined case remote control you would find with much more expensive preamplifiers. On the other hand, it is compact, attractive, lightweight and simple to use.

Construction has been simplified. It was decided to make an extra investment in the up-front engineering expenses to simplify the construction of each production unit. This investment helps keep the cost to assemble each unit reasonable. When you look inside the case of The Director you will immediately see the neat, tidy layout. There is an elegant functionality to each design decision.

The Director is a streamlined design. It is not laden with extra features. Everything about it is focused on sound quality. And now it's yours to enjoy.

SPECIFICATIONS and OPTIONS

INPUTS
4 high level inputs

VOLUME STEPS
31 steps of 1 dB in the range of –27.3 dB to –57.3 dB
96 steps of 0.5 dB in the range of +20.7 dB to –27.3 dB

UNITY GAIN OPTION
Any one or more of the inputs can be assigned unity gain pass thru for home theater use.

MAXIMUM INPUT VOLTAGE
Each input of the Director can be configured as DIRECT or ATTENUATED.
When configured DIRECT, the maximum input voltage is 3 V rms.
When configured ATTN, the maximum input voltage is 18 V rms.

MAXIMUM DISTORTION
Less than 0.01% total harmonic distortion plus noise 'A' weighted, output level 2.5 volts rms, 1 kHz

MAXIMUM GAIN	
DIRECT	+20.7 dB
ATTN	+3.8 dB
INPUT IMPEDANCE	
When configured DIRECT	42,000 ohms
When configured ATTN	29,000 ohms
OUTPUT IMPEDANCE	270 ohms
MAXIMUM OUTPUT VOLTAGE	8 Volts rms
POWER CONSUMPTION	10 Watts
FUSE TYPE	⅛ amp, slo-blo
DIMENSIONS	17" wide X 4.25" high X 15" deep
NET WEIGHT	24 lbs. (11 kg)
SHIPPING WEIGHT	29 lbs. (14 kg)

Sutherland Engineering products, like those of AcousTech Electronics,
are designed by Ron Sutherland for exclusive distribution through Acoustic Sounds, Inc.

SUTHERLAND Engineering, Inc.

ACOUSTIC SOUNDS

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