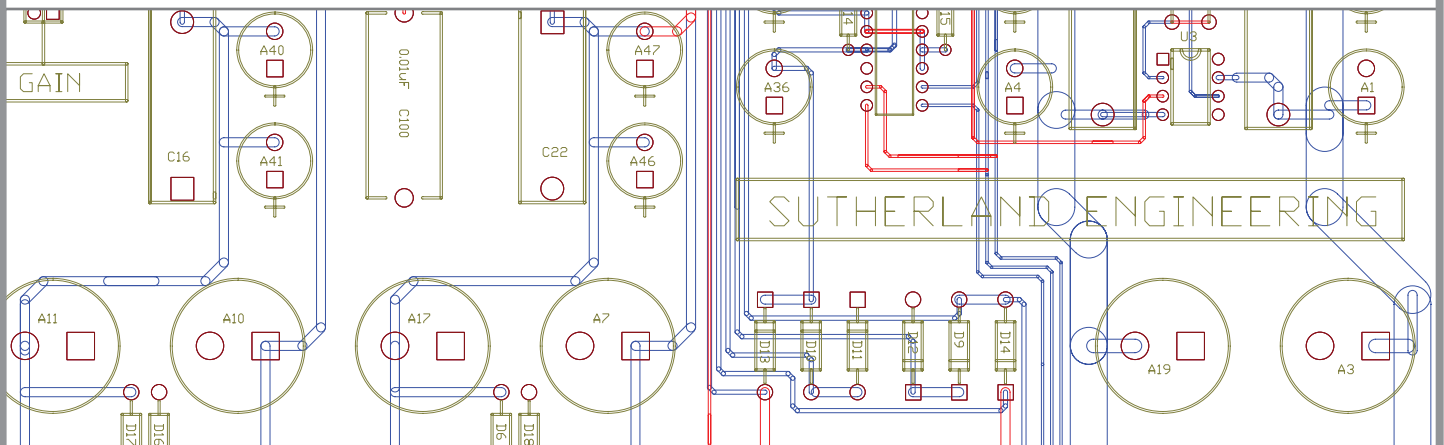


# N1

-a preamplification  
instrument  
by Sutherland Engineering



## OWNER'S MANUAL





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## INTRODUCTION

As we surge ahead, focused on the latest break through, it is easy to loose sight of prior art. The N1 design reaches back to incorporate the latest technology of 1955. That would be the Nixie tube, the first numeric display.

The design then moves forward to mine other historical treasures.

In the 60s, 70s and 80s, all preamps were full-featured. That is, they included a phono stage, a line stage and a power supply all in one box. There are significant advantages in going that way. The installation is simpler, the cabling requirements are simpler - it has a feeling of concentrated purpose.

All preamps of that era had single-ended circuit topology. That was the standard and had the very significant advantage of simplicity of the signal path. More recent marketing efforts promote balanced connectivity. Balanced topology imposes twice the circuitry into the signal path. Abandoning single-ended is not an advancement.

AND playing vinyl (or should I say records?) was how we accessed our music. The advantages and enjoyment of vinyl are more treasured now than ever before.

The N1 also includes what we would expect from a modern design. It has remote control of volume, input and mute. Each component is carefully selected to bring you closer to your music. AND it uniquely incorporates Sutherland circuitry derived from the cost-no-object Destination series.

To fully appreciate the heart-felt passion that went into every detail of the N1, you also need to study the thoughtful, meticulous layout inside the case.

Every detail makes for 'pride of ownership'. The machined aluminum front panel, the tempered glass display window, the understated minimalism --- all speak of old fashioned pride of craftsmanship.

That's the N1 story. But the true appreciation and enjoyment of the N1 is really based on direct experience.





## INSTALLATION

Installation is straight forward. The N1 is supplied with a very basic AC power cord to get you started. Many will want to use something more high-end. Feel free to experiment. The N1 will automatically accept incoming AC line voltages between 90 volts and 260 volts. No adjustments are necessary. It is designed to be powered up all the time. There is no on/off switch.

The N1 dissipates very little heat. It has no special ventilation needs. However, do not place it on top of heat generating components - like power amplifiers.

All right channel connections are on the upper row of connectors.  
All left channel connections are on the lower row of connectors.

There are two sets of output jacks per channel. One output would go to your power amplifier. The second could be used for a subwoofer, a recording device or other accessory. Output impedance is a low 200 Ohms and can drive long runs of interconnecting cable, if necessary.



Line level inputs use connectors 2 thru 5. Input 5 is a unity gain pass through for integrating into your home theater system.

Phono uses input 1. Attach your turntable's grounding wire to the thumbscrew near the phono inputs.

## USING

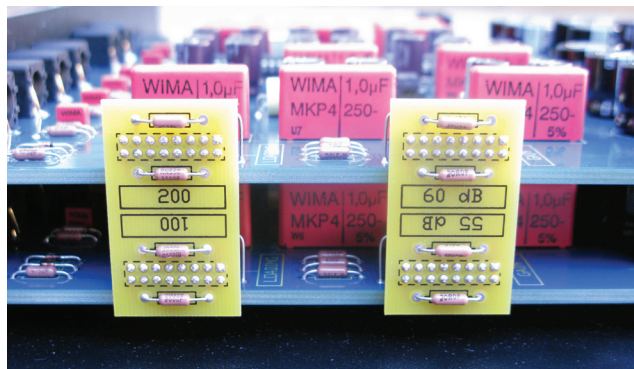
When AC power is first applied to the N1, software begins a power up sequence. The digital display will count down from 60 seconds. When 00 is reached, the initial selected input will be 1 and the initial selected volume will be 00.

To select a different input, press the control knob. The two digits of volume indication will go off. That leaves only the input display illuminated. The outputs are now muted and the knob is used for selecting an input. The N1 is unmuted by pressing the front panel knob again. The volume numeric indication comes back on and the volume level will then ramp up to the value last used with that particular input.

The N1 has a timer feature that will automatically turn off the Nixie displays. If the N1 controls (knob or remote) are not used for a certain time period, the Nixie displays will go off and a yellow LED will go on. There is no change in audio settings. The Nixie display simply turns off. You can select the time period (in hours). To do so, press and hold the control knob in for 5 seconds. When it is released, the yellow LED will blink and you can select the time period with the control knob. When set to 0, the timer is disabled and the Nixie display will stay on continuously. After selecting the time period, press the knob again to return to normal preamp operation.

## CONFIGURATION OF THE PHONO STAGE

The phono stage is configurable for many gain and loading options. It is shipped with 200 Ohms for loading and 60 dB for gain. You can easily choose other values. Remove the top cover. On the left side of the audio board are connectors for the loading and gain cards. Simply plug in the value of your choice. Each card carries two values. With no card in the loading socket, you will have a loading of 47.5 k Ohms. Each card will connect to both the left and right audio boards - thus both channels will be set to the same value.



## THE REMOTE CONTROL

If you've been frustrated by complex remote controls, you will appreciate the N1's remote. It is so simple there was no need to even label the buttons. And yet it still does more than you might expect.

Basically there is the volume up button, the volume down button and the mute button.

Beyond those basic functions, are more thoughtful and useful aspects. When the N1 is muted (by either pressing the front panel knob or the orange mute button on the remote), the volume level quickly goes to zero and the two digits of volume indication go off. That leaves only the input display illuminated. The remote up/down buttons then function to make changes to the selected input. When the N1 is then unmuted, the volume numeric indication comes back on and the volume level will then ramp up to the value last used with that particular input.

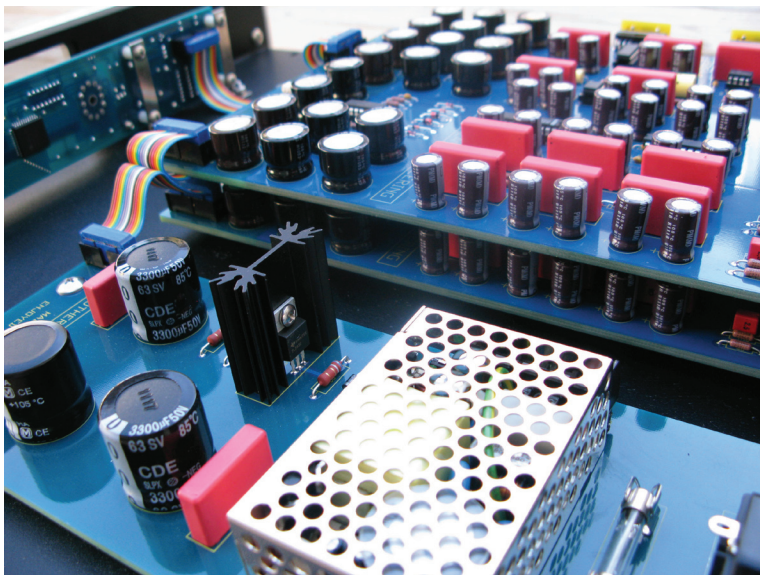


The orange LED on the remote shows how rapidly commands are being sent. One command for each flash. A quick push of the volume up or down buttons will send only one command. Volume can be easily raised or lowered by one value. Holding the button down for longer will send more commands and at a faster rate.

## DISCUSSION OF DESIGN

The N1 uses a stack of two identical mono boards. Each board contains a mono phono preamp, a mono input selector, a mono volume control, a mono line stage, multiple stages of power supply filtering / regulation and a processor for control.

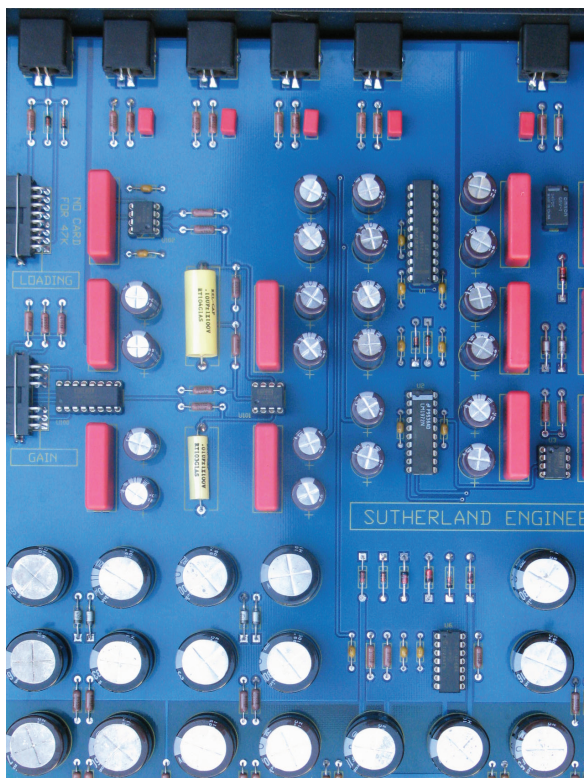
Each channel of music will see exactly the same circuit and physical layout. The most subtle details between the two channels will be preserved as they travel thru precisely identical signal paths.



Construction details contribute not only to the N1's performance but also to pride in owning a well crafted instrument. The neat and orderly internal layout reflect the attention to every design detail.

## THE PHONO STAGE

The phono stage is the same circuitry as used in the Destination level PhonoBlocks. Only the power supply



is down sized a bit. It is assumed that vinyl is the primary listening source. This phono stage compares to the finest available separates. One half of each audio board's area is dedicated to the phono stage.

### THE LINE STAGE

The line stage is the same circuitry as used in the Destination level LineBlocks. Only the power supply is down-sized. The line stage circuit and layout of the N1 was literally lifted from the LineBlock's CAD files using copy and paste.

### THE CONTROL SECTION

The N1 uses exactly the same control board as the LineBlocks. The Nixie displays are not only an aesthetic retro touch, they are bright, large and easy to read from a distance.

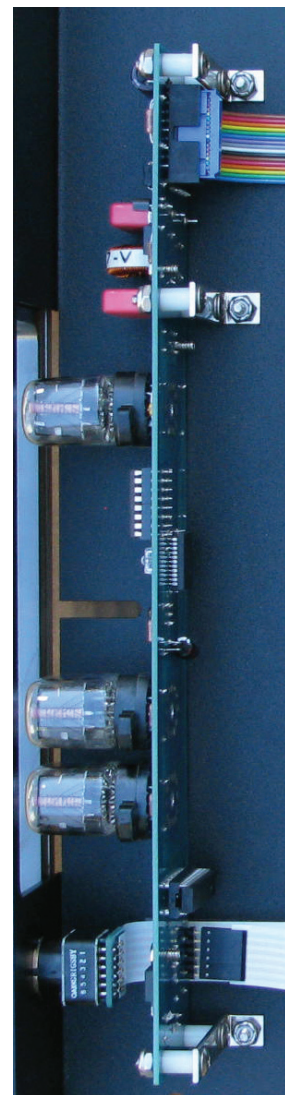
Control couldn't be simpler. One knob for input selection, volume control and muting. The N1 will also conveniently remember and restore the volume level last used for any particular input.

Muting is fast, but volume is more slowly ramped up when unmuting.

### THE WHITE NOISE GENERATOR

It can take quite a long listening time before a high resolution component reaches its full performance potential. The N1 is no exception.

However, the N1 has a built in white noise generator that can be used as a break-in signal. Simply select input number 6 and the white noise generator will be enabled. When an input other than 6 is selected, the noise generator is completely disabled and out of the listening path. You can use the white noise generator with your power amplifier either on or off. If it is on, you will hear white noise from your speakers. Thus all of your system will be subjected to a break-in signal.



## SPECIFICATIONS

GAIN LINE STAGE: 12 dB (max, display at 99)  
0 dB (display at 76)

GAIN PHONO STAGE: 45 dB, 50 dB, 55 dB, 60 dB

LOADING PHONO STAGE: 100, 200, 475, 1K, 10K, 47K

### INPUTS:

Input 1 is phono

Inputs 2, 3 and 4 are line level with adjustable volume

Input 5 is unity gain pass thru for Home Theater

Input 6 enables a built in white noise generator

### OUTPUTS:

Two paralleled per channel.

### SIZE:

3.5" high X 17" wide X 18" deep