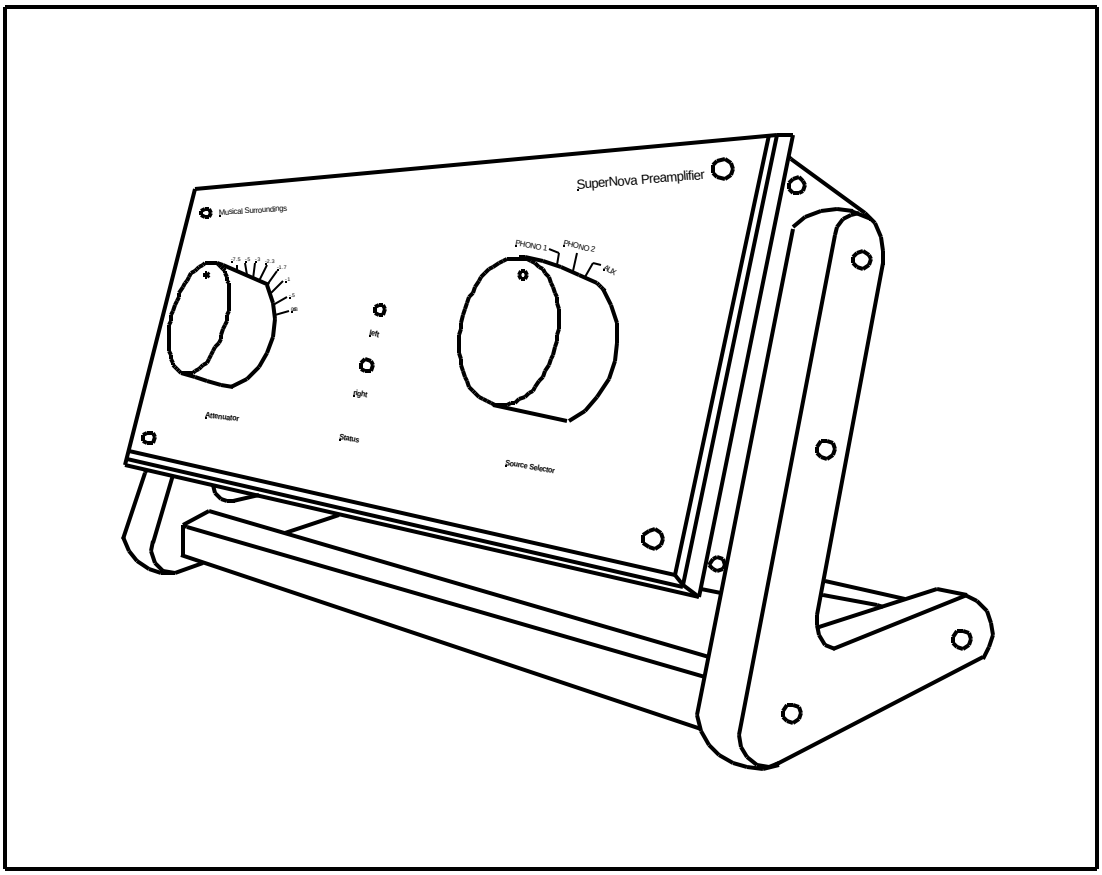
# Musical Surroundings Presents:

# The SuperNova 2

# preamplifier




owner's manual

Musical Surroundings Presents:

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# Introducing: the SuperNova 2

The SuperNova 2 is an extremely versatile preamplifier that delivers an accurate, rich, precise representation of recorded sound, allowing users to hear music as it was meant to be heard. The SuperNova 2 accepts two phono cartridges and, if used in Power Amp-Direct setup, an additional line-level input. The unit also has independent Input Loading and Gain settings and comes with a Battery Power Supply that allows the unit to run powered by four fully-rechargeable battery packs, which frees the system from noise and distortion from AC power and improves the sound accuracy even further.

.

First, determine whether you should connect the unit in the Standard configuration (line-level output) or the Power Amp-Direct configuration (variable output).

## Standard configuration (fixed output)

- For reasons of convenience, many users will want to connect their SuperNova 2 so that it will deliver a line-level signal. We call this the Standard configuration.
- In this setup the SuperNova 2 might be one of several sources to be connected to a line-level destination which controls volume and features.
- If the user requires a wider dynamic range of attenuation (i.e., for quieter listening), the Standard configuration is recommended.

## Power Amp-Direct configuration (variable output)

- Users who listen primarily to LPs (and one other line-level source), and don't mind having a system devoted to that, will prefer connecting the SuperNova 2 directly to a power amp. We call this the Power Amp-Direct configuration.
- This setup eliminates the line-stage from the signal path for cleaner sound.
- Since most power amps do not offer independent volume control, the Attenuator knob on the front panel serves as a volume control when in Power Amp-Direct.
- The SuperNova 2 accepts two phono inputs and one line-level input.

## Overview of the setup process:

- Determine output preference and connect SuperNova 2 output jacks to their destination.
- Connect input cables (from turntables or line-level source) to the appropriate input jacks on the rear panel of the SuperNova 2. Secure any ground wire(s) to the grounding lug.
- Set Input Loading and Gain for each source.
- Connect the SuperNova 2 by ribbon cable to the Battery Power Supply, which connects to wall power via the supplied power cord.
- After powering up, fine-tune Input Loading, Gain and Attenuation (if needed).

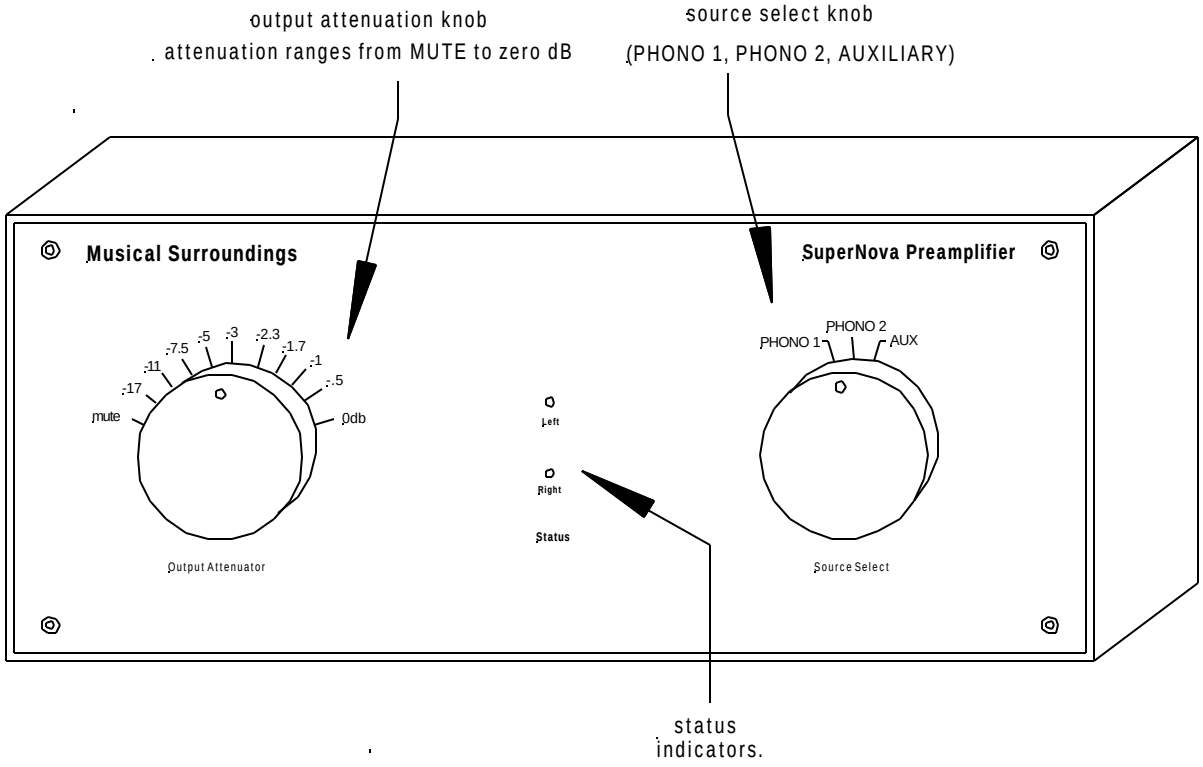
Refer to either Part 1 (Standard configuaration) or Part 2 (Power Amp-Direct configuration) for more detailed setup instructions.

## Front Panel

The front panel of the SuperNova 2 provides user controls for source input and, when in the Power-Amp-Direct configuration, Attenuation.

- The Source Select knob allows switching between three input sources, two Phono inputs for cartridges and one line-level input. The line-level input is used in Power Amp-Direct configuration.
- The 11-step (mute to 0 dB) passive Attenuator provides volume control while in Power Amp-Direct.
- The two (left and right channel) LEDs indicate operating mode (wall power or battery power).

### Front Panel Diagram

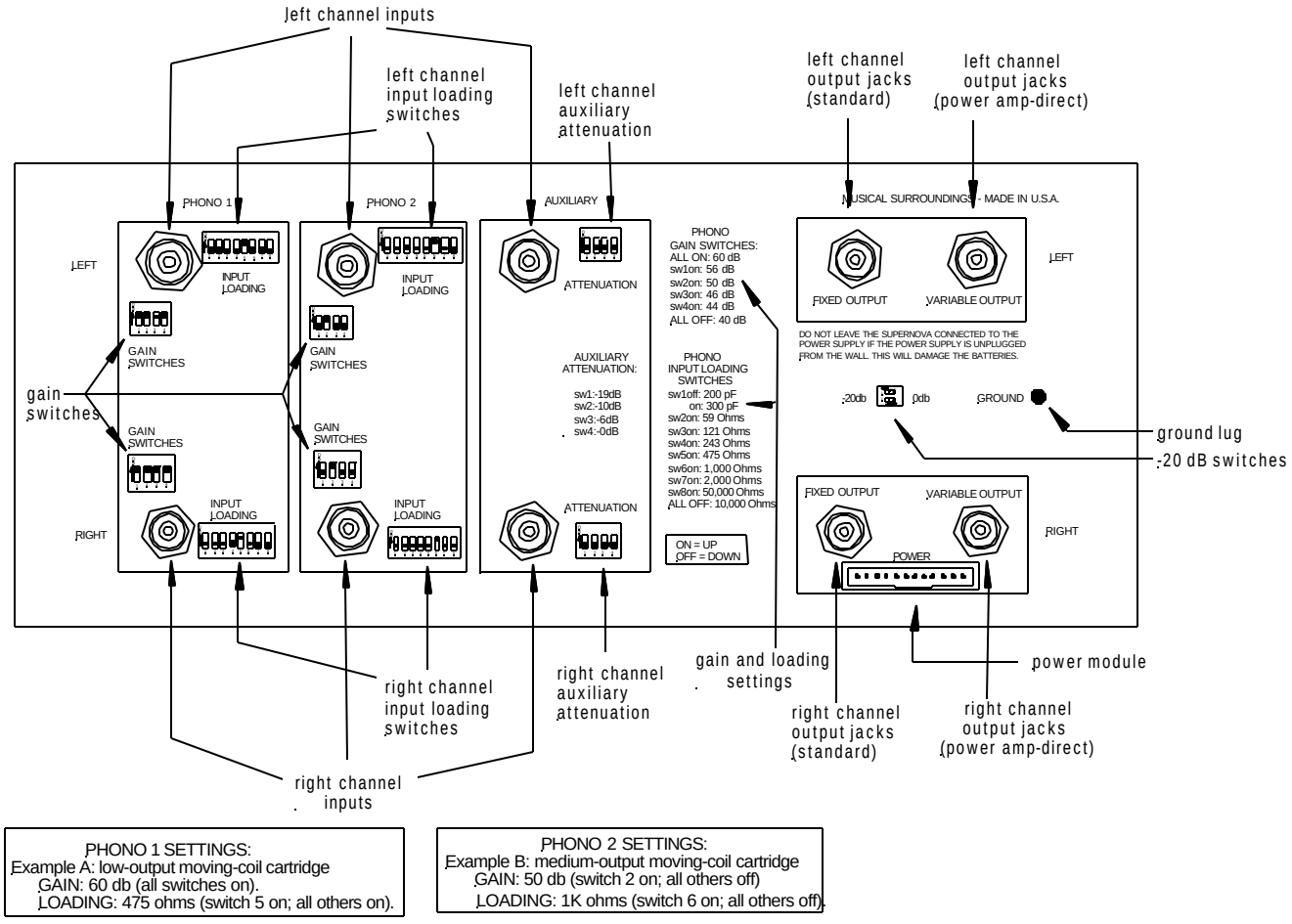


## Rear Panel

The SuperNova 2's rear panel features left and right inputs (for three sources), left and right outputs (for two configurations), left and right Input Loading and Gain switch banks, Auxiliary Attenuation switch banks, -20db switch bank, ground lug and power module.

- Input jacks are accepted from two cartridges and one auxiliary line-level source.
- There are two sets of output jacks (variable and fixed).
- Input Loading (8-switch banks) and Gain (4-switch banks) are user-adjustable for each cartridge.
- Auxiliary Attenuation (2-switch banks) is user-adjustable.
- The –20dB switch (for high-output cartridges) is user-adjustable.
- Power Module connects a ribbon cable to the SuperNova Power Supply.
- A general guide to Input Loading and Gain settings is provided on the rear panel (see pages 8 and 9 for Input Loading and Gain settings charts).

### Rear Panel Diagram




PHONO 1 SETTINGS:
Example A: low-output moving-coil cartridge
GAIN: 60 db (all switches on).
LOADING: 475 ohms (switch 5 on; all others on).

PHONO 2 SETTINGS:
Example B: medium-output moving-coil cartridge
GAIN: 50 db (switch 2 on; all others off)
LOADING: 1K ohms (switch 6 on; all others off).

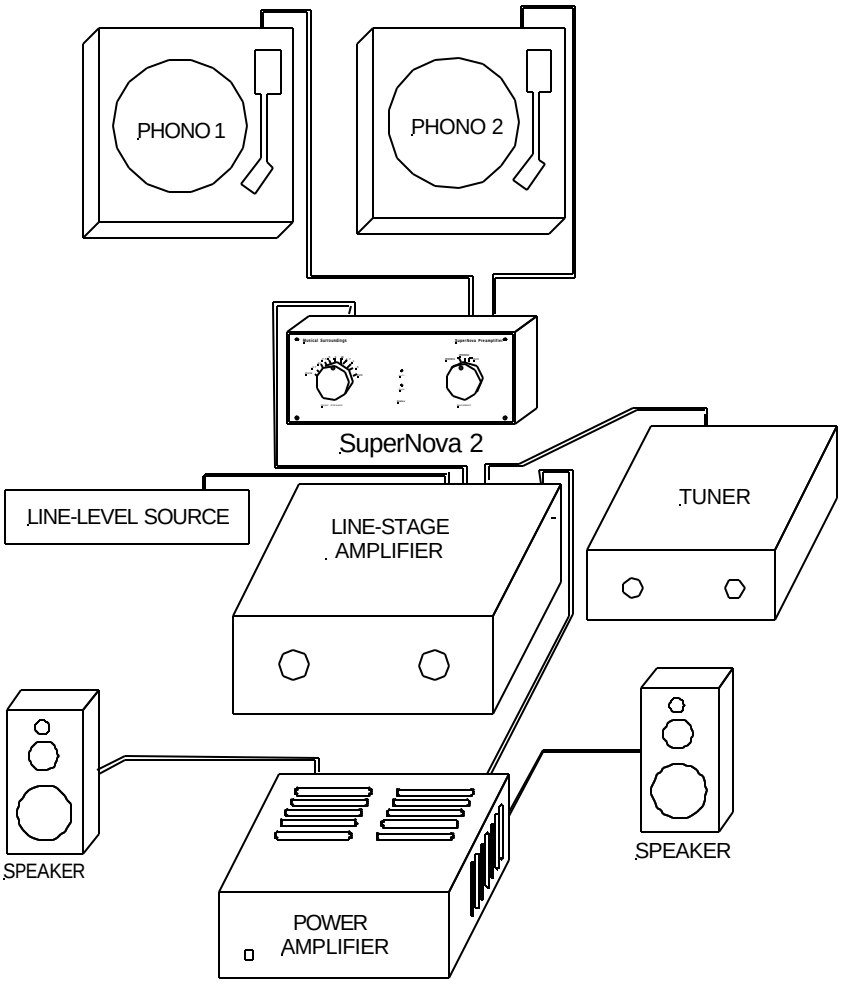
# 1. Standard configuration

## 1.1 Output Connection (Standard configuration)

In this configuration, the user has chosen to connect the SuperNova 2 to a line-level destination.

? With power off to all equipment, connect cables from SuperNova 2's output jacks (fixed output) to the line-in input jacks of the line-level destination.

### Standard Configuration Diagram



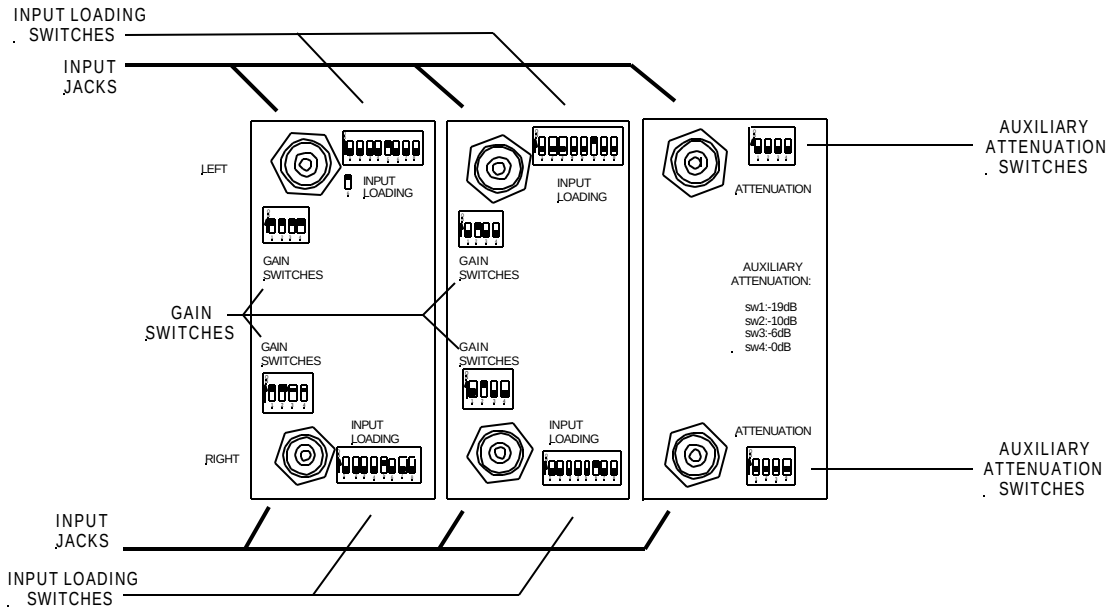

The third input, AUXILIARY, is for use only in Power Amp-Direct configuration, and is inactive in Standard configuration.

## 1.2 Input Connections (Standard configuration)

Input connections are accepted from two phono sources and one line-level source.

- Connect cables from turntable(s) to Phono 1, Phono 2 or both.
- Connect ground wire(s) to ground lug.
- You are now ready to set the Input Loading and Gain to fit your specific cartridge(s)

### Inputs Diagram




## 1.2.1 Setting the Input Loading (Standard Configuration)

The Input Loading switch packs are located on the back panel. Use a non-metallic tool to set the switches (up=on; down=off).

- Switch 1 controls Capacitive Loading, which is generally used with moving-magnet cartridges and has little effect on moving-coil cartridges. Adjust switch 1 as follows: sw1off = 200pF; sw1on = 300pF.
- Switches 2-8 control Resistive Loading, which is primarily used with lower-output moving-coil cartridges.
- Consult the chart below to find the setting that corresponds most closely to the cartridge manufacturer's recommendations found in the Owner's Manual or at the manufacturer's website.
- Moving-magnet and high-output moving-coil cartridges use around 50,000 ohms.
- Low-output moving-coil cartridges typically use 1,000 ohms or less.
- Typically, a low-output moving-coil cartridge should be loaded to ten times its output impedance. Thus cartridges with an internal impedance of less than ten

ohms will be more sensitive to loading settings below 300 ohms, which are provided in the SuperNova 2.

- The factory setting for is 200pf/50,000 ohms.
- After setting the switches a user may fine-tune the switch settings by ear to personal taste.
- Typically, a lower setting provides increased focus and tighter bass, while a higher setting provides more openness.

### Input Loading Settings Chart

| LOADING (ohms) | switch # 2 | 3 | 4 | 5 | 6 | 7 | 8 | LOADING (ohms) | switch # 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | on | on | on | on | on | off | off | 96 | off | on | off | on | off | off | off |
| 32 | on | on | on | on | off | off | off | 101 | off | on | off | off | on | on | off |
| 33 | on | on | on | off | on | off | off | 107 | off | on | off | off | on | off | off |
| 34 | on | on | on | off | off | off | off | 113 | off | on | off | off | off | on | off |
| 35 | on | on | off | on | on | on | off | 120 | off | on | off | off | off | off | off |
| 36 | on | on | off | on | off | on | off | 129 | off | off | on | on | on | on | off |
| 38 | on | on | off | off | on | on | off | 137 | off | off | on | on | on | off | off |
| 40 | on | on | off | off | off | off | off | 148 | off | off | on | on | off | on | off |
| 41 | on | off | on | on | on | on | off | 160 | off | off | on | on | off | off | off |
| 43 | on | off | on | on | off | off | off | 176 | off | off | on | off | on | on | off |
| 45 | on | off | on | off | on | off | off | 193 | off | off | on | off | on | off | off |
| 48 | on | off | on | off | off | off | off | 214 | off | off | on | off | off | on | off |
| 50 | on | off | off | on | on | off | off | 240 | off | off | on | off | off | off | off |
| 53 | on | off | off | on | off | off | off | 279 | off | off | off | on | on | on | off |
| 56 | on | off | off | off | on | off | off | 322 | off | off | off | on | on | off | on |
| 60 | on | off | off | off | off | off | off | 384 | off | off | off | on | off | on | on |
| 64 | off | on | on | on | on | off | off | 480 | off | off | off | on | off | off | off |
| 68 | off | on | on | on | off | off | off | 658 | off | off | off | off | on | on | on |
| 74 | off | on | on | off | on | off | off | 1000 | off | off | off | off | on | off | off |
| 80 | off | on | on | off | off | off | off | 2000 | off | off | off | off | off | on | off |
| 87 | off | on | off | on | on | off | off | 50,000 | off | off | off | off | off | off | on |
| 91 | off | on | off | on | off | on | off | 100,000 | off | off | off | off | off | off | off |

## 1.2.2 Setting the Gain (Standard configuration)

The Gain switches are located on the back panel. Use a non-metallic tool to adjust the settings (up=on, down=off).

- The chart below provides a general guide to choosing Gain settings appropriate to your cartridge.
- There are 16 total possible Gain combinations.
- After adjusting the gain to match factory recommendations, settings may be further fine-tuned to personal taste or system characteristics.
- Generally, lower Gain settings (40dB) are intended for moving-magnet cartridges or high-output moving-coil cartridges.

- Higher gain settings are intended for use with low-output moving-coil cartridges (0.5mV or so).
- To reduce Gain to below 40dB (e.g., with a high-output cartridge) use the -20dB Gain Switches located on the Rear Panel.

**Note:** Always let the unit settle for 60 seconds after any configuration changes are made before listening. Slowly raise the volume control to insure that the unit is stable and will not damage your system if the configuration is not set correctly.

### Gain Settings Chart

| **GAIN** | **switch #** | | | |
|---|---|---|---|---|
| **(dB)** | **1** | **2** | **3** | **4** |
| 40 | off | off | off | off |
| 43.5 | off | off | off | on |
| 46 | off | off | on | off |
| 48 | off | off | on | on |
| 50 | off | on | off | off |
| 51.5 | off | on | off | on |
| 52.7 | off | on | on | off |
| 53.8 | off | on | on | on |
| 55.6 | on | off | off | off |
| 56.3 | on | off | off | on |
| 56.9 | on | off | on | off |
| 57.5 | on | off | on | on |
| 58.4 | on | on | off | off |
| 58.9 | on | on | off | on |
| 59.4 | on | on | on | off |
| 59.9 | on | on | on | on |

## 1.3 Battery Power Supply (Standard configuration)

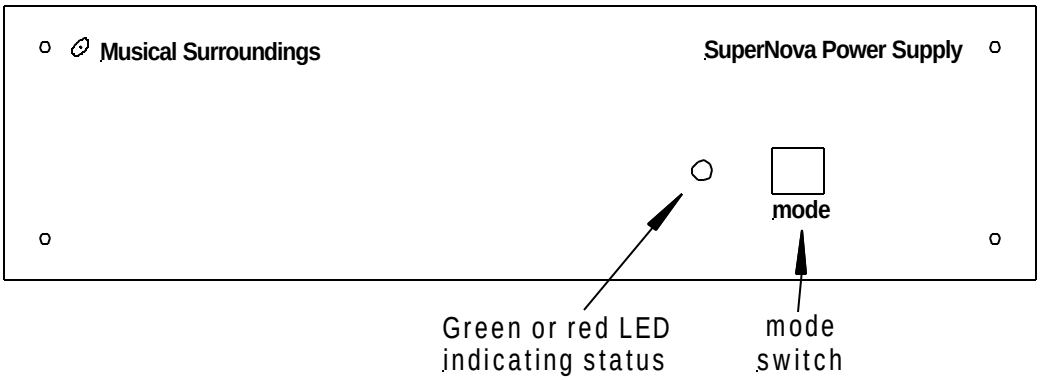
The SuperNova 2 Battery Power Supply connects to the wall via the supplied power cord, and to the SuperNova 2 chassis via the supplied ribbon cable. The ribbon cable clips into the power module at the base of the rear panel. Use care not to bend or crinkle the ribbon cable.

- The connection of the Battery Supply Unit is the same in either Standard or Power Amp-Direct configuration.
- Switch the Battery Power Supply to battery mode (green) by pressing the switch on the unit's front panel.
- When you have finished listening, switch the unit back into charging mode (red). If you forget to do this, the unit will initiate the charging cycle itself, although we recommend that you not let this happen frequently. This will maximize the life of your battery packs.
- The unit is guaranteed to operate for at least three hours in battery mode.

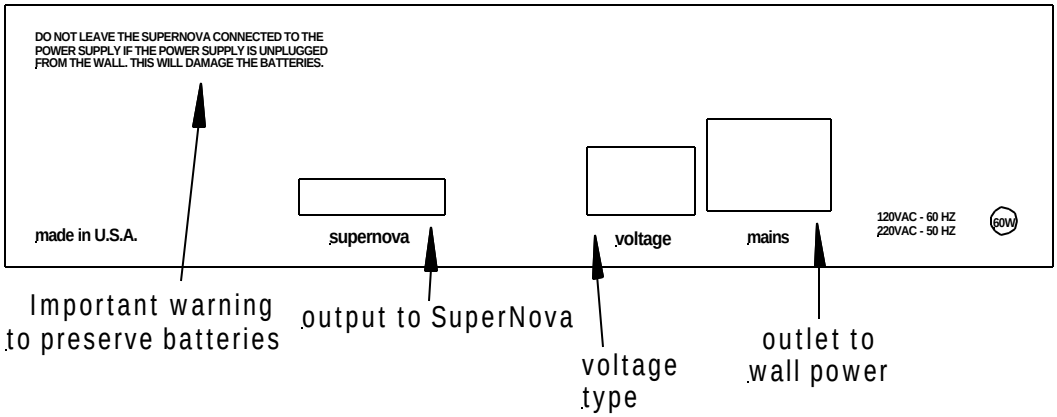
The LED on the front panel indicates the status of the unit:

1) GREEN = battery mode: unit is operating on battery power.
2) RED = charged mode: batteries are fully charged; unit is operating on wall power.
3) BLINKING RED = charging mode; unit is operating on wall power.

## Battery Power Supply Front Panel Diagram




## Battery Power Supply Rear Panel Diagram




**WARNING:** DO NOT leave the SuperNova 2 connected to the power supply if the power supply is unplugged from the wall. This will damage the batteries.

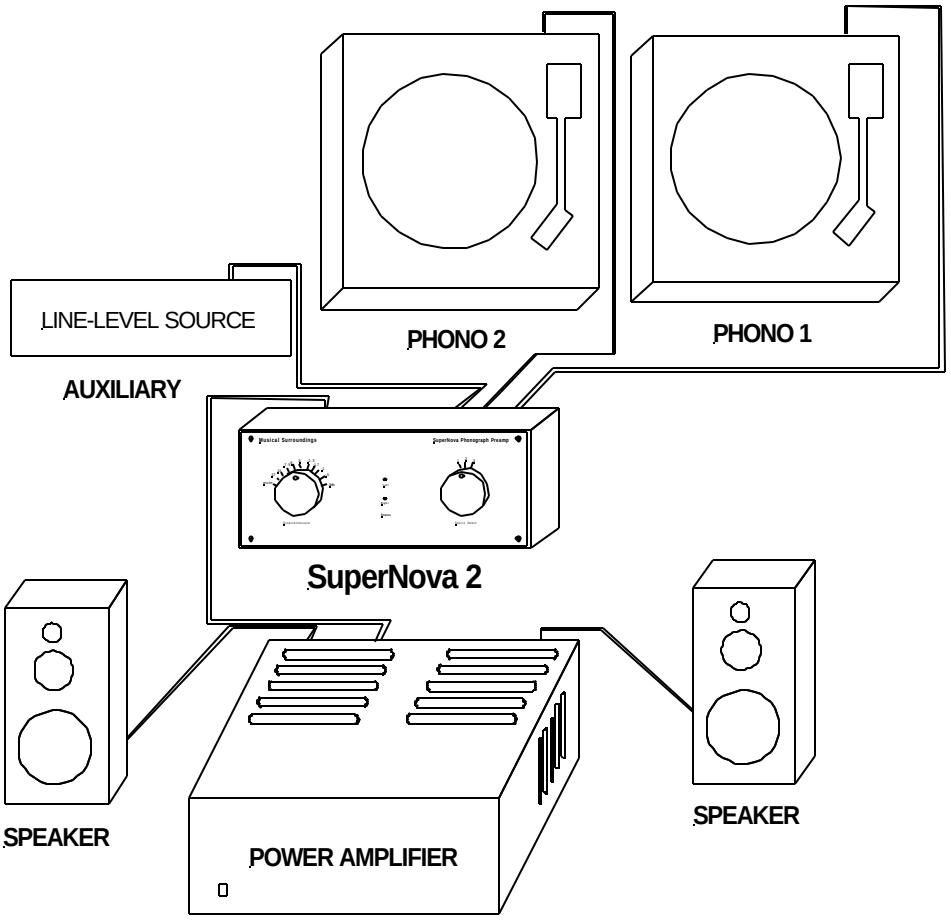
# 2) Power Amp-Direct Configuration (Variable Output)

## 2.1 Output Connection (Power Amp-Direct configuration)

In this configuration, the user has chosen to connect the SuperNova 2 directly to a power amplifier.

- Connect the SuperNova 2's variable output jacks to the power amp.
- Since a power amp generally does not feature independent volume control, the Attenuator Knob on the SuperNova 2's front panel serves as the master volume control when in the Power Amp-Direct configuration.
- The range of Attenuation is set by the Auxiliary Attenuation switches on the rear panel.

### Power Amp-Direct Configuration Diagram

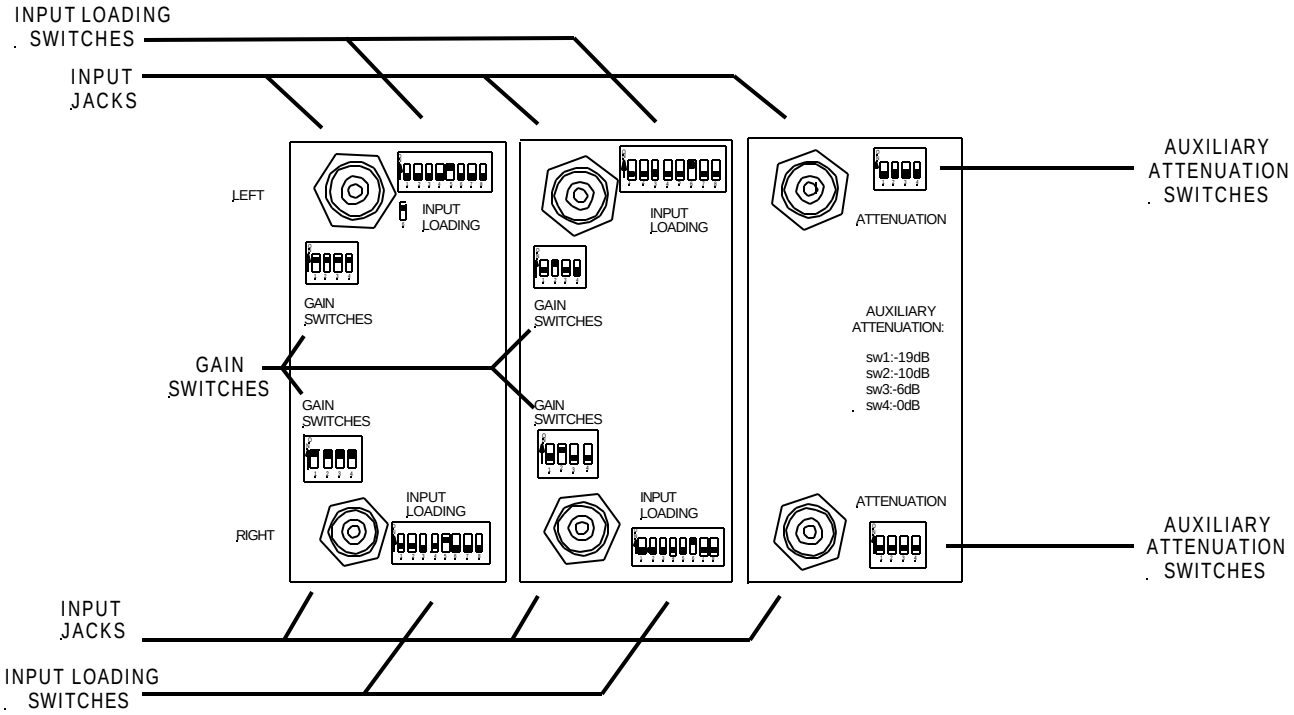


## 2.2 Input Connections (Power Amp-Direct configuration)

The SuperNova 2 accepts two phono inputs (Phono 1, Phono 2) and an Auxiliary line-level input. In the Power Amp-Direct configuration all three are active.

- Connect cables from turntable(s) to Phono 1, Phono 2 or both.
- Connect ground wire(s) to ground lug.
- If the user wishes to have convenient access to a CD player, tuner or other line-level source, connect line-out cables from the source to the Auxiliary inputs.
- The Auxiliary Attenuation switches on the rear panel allow the user to balance Auxiliary Gain levels to the Phono Inputs.

### Inputs Diagram




## 2.2.1 Setting the Input Loading (Power Amp-Direct Configuration)

The Input Loading switch packs are located on the back panel. Use a non-metallic tool to set the switches( up=on; down=off).

- Switch 1 controls Capacitive Loading, which is generally used with moving-magnet cartridges and has little effect on moving-coil cartridges. Adjust switch 1 as follows: sw1off=200pF; sw1on=300pF.
- Switches 2-8 control Resistive Loading, which is primarily used with lower-output moving-coil cartridges.

- Consult the chart below to find the setting that corresponds most closely to the cartridge manufacturer's recommendations found in the Owner's Manual or at the manufacturer's website.
- Moving-magnet and high-output moving-coil cartridges use around 50,000 ohms.
- Low-output moving-coil cartridges typically use 1,000 ohms or less.
- Typically, a low-output moving-coil cartridge should be loaded to ten times its output impedance. Thus cartridges with an internal impedance of less than ten ohms will be more sensitive to loading settings below 300 ohms, which are provided in the SuperNova 2.
- The factory setting for is 200pf/50,000 ohms.
- After setting the switches a user may fine-tune the switch settings by ear to personal taste.
- Typically, a lower setting provides increased focus and tighter bass, while a higher setting provides more openness.

## Input Loading Settings Chart

| LOADING (ohms) | switch # 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 31 | on | on | on | on | on | off | off |
| 32 | on | on | on | on | off | off | off |
| 33 | on | on | on | off | on | off | off |
| 34 | on | on | on | off | off | off | off |
| 35 | on | on | off | on | on | on | off |
| 36 | on | on | off | on | off | on | off |
| 38 | on | on | off | off | on | on | off |
| 40 | on | on | off | off | off | off | off |
| 41 | on | off | on | on | on | on | off |
| 43 | on | off | on | on | off | off | off |
| 45 | on | off | on | off | on | off | off |
| 48 | on | off | on | off | off | off | off |
| 50 | on | off | off | on | on | off | off |
| 53 | on | off | off | on | off | off | off |
| 56 | on | off | off | off | on | off | off |
| 60 | on | off | off | off | off | off | off |
| 64 | off | on | on | on | on | off | off |
| 68 | off | on | on | on | off | off | off |
| 74 | off | on | on | off | on | off | off |
| 80 | off | on | on | off | off | off | off |
| 87 | off | on | off | on | on | off | off |
| 91 | off | on | off | on | off | on | off |

| LOADING (ohms) | switch # 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| 96 | off | on | off | on | off | off | off |
| 101 | off | on | off | off | on | on | off |
| 107 | off | on | off | off | on | off | off |
| 113 | off | on | off | off | off | on | off |
| 120 | off | on | off | off | off | off | off |
| 129 | off | off | on | on | on | on | off |
| 137 | off | off | on | on | on | off | off |
| 148 | off | off | on | on | off | on | off |
| 160 | off | off | on | on | off | off | off |
| 176 | off | off | on | off | on | on | off |
| 193 | off | off | on | off | on | off | off |
| 214 | off | off | on | off | off | on | off |
| 240 | off | off | on | off | off | off | off |
| 279 | off | off | off | on | on | on | off |
| 322 | off | off | off | on | on | off | on |
| 384 | off | off | off | on | off | on | on |
| 480 | off | off | off | on | off | off | off |
| 658 | off | off | off | off | on | on | on |
| 1000 | off | off | off | off | on | off | off |
| 2000 | off | off | off | off | off | on | off |
| 50,000 | off | off | off | off | off | off | on |
| 100,000 | off | off | off | off | off | off | off |

## 2.2.2 Setting the Gain (Power Amp-Direct configuration)

The Gain switches are located on the rear panel. Use a non-metallic tool to adjust the settings (up=on; down=off).

- The chart below provides a general guide to choosing Gain settings appropriate to your cartridge.
- Gain setting selection will be based on your system characteristics to optimize the range of the 11-step Attenuator on the front panel. We recommend the following process:
- Mute the Attenuator and play a favorite LP. Play the loudest section of a familiar piece.
- Slowly turn the Attenuator to the right until the system is at full volume.
- Use a non-metallic tool to adjust the Gain switches on the rear panel so that the "full-volume" Attenuator setting (0dB) is slightly louder than you would ever want to hear it.
- You have now set the proper Gain level for one Phono input. Repeat for the other Phono input if you will be using a second turntable or cartridge.
- If you are using a line-level source through the Auxiliary input, you may adjust the Auxiliary Attenuation to balance it to the Phono inputs for smooth switching.
- Do so by playing a familiar CD or line-level signal (again, loudest section). Turn the Attenuator to the "full-volume" (0dB) position. Adjust the Auxiliary Attenuation switches so that the volume is slightly louder than you would ever want to hear it.

### Gain Settings Chart

| GAIN (dB) | switch # 1 | 2 | 3 | 4 | GAIN (dB) | switch # 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|
| 40 | off | off | off | off | 55.6 | on | off | off | off |
| 43.5 | off | off | off | on | 56.3 | on | off | off | on |
| 46 | off | off | on | off | 56.9 | on | off | on | off |
| 48 | off | off | on | on | 57.5 | on | off | on | on |
| 50 | off | on | off | off | 58.4 | on | on | off | off |
| 51.5 | off | on | off | on | 58.9 | on | on | off | on |
| 52.7 | off | on | on | off | 59.4 | on | on | on | off |
| 53.7 | off | on | on | on | 59.9 | on | on | on | on |

- To reduce Gain to below 40dB (with a high-output cartridge) use the -20dB Gain switches located on the rear panel.

**Note:** Always let the unit settle for 60 seconds after any configuration changes are made before listening. Slowly raise the volume control; this insures that the unit is stable and will not damage your system if the configuration is not set correctly.

## 2.3 Battery Power Supply (Power Amp-Direct configuration)

The SuperNova 2 Battery Power Supply connects to the wall via the supplied power cord, and to the SuperNova 2 chassis via the supplied ribbon cable. The ribbon cable clips into the power module at the base of the rear panel. Use care not to bend or crinkle the ribbon cable.

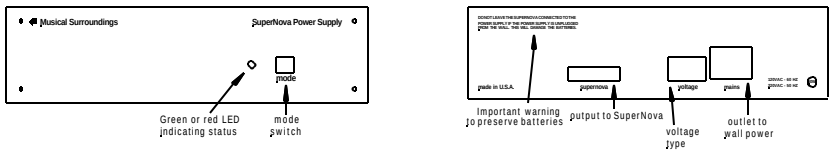
- The connection of the Battery Supply Unit is the same in either Standard or Power Amp-Direct configuration.
- Switch the Battery Power Supply to battery mode (green) by pressing the switch on the unit's front panel.
- When you have finished listening, switch the unit back into charging mode (red). If you forget to do this, the unit will initiate the charging cycle itself, although we recommend that you not let this happen frequently. This will maximize the life of your battery packs.
- The unit is guaranteed to operate for at least three hours in battery mode.

The left and right channel LEDs on the front panel indicate the status of the unit:

1) GREEN = battery mode: unit is operating on battery power.
2) RED = charged mode: batteries are fully charged; unit is operating on wall power.
3) BLINKING RED = charging mode; unit is operating on wall power.

### Battery Power Supply

front panel rear panel




**NOTE: Do not leave the SuperNova 2 connected to the Battery Power Supply if the BPS is unplugged from the wall. This will damage the batteries.**

## Mike Yee's notes (on the SuperNova)

The SuperNova switching between the inputs does not actually switch the inputs and loading, but rather by three independent front ends that are switched by means of switching the current source to one of the front ends. The outputs of the front ends are summed into the back-end circuitry. In this way no switching occurs in the signal path when not using the switched attenuator.

The SuperNova is fully dual mono and is powered from a remote dual mono power supply. The remote power supply supports NiMH rechargeable batteries but is designed to work perfectly without the batteries. The batteries will allow the SuperNova to run completely isolated from the wall power for a period of three hours. There are four independent charging circuits for the four battery packs. The

SuperNova has an 11-position switched attenuator output that allows "direct output" to a power amplifier.

**HOW THE LIMITED ATTENUATOR WORKS:**

| Gain in a typical system: | | Gain with an attenuated SuperNova: | |
|---|---|---|---|
| MC Phono Stage | 60dB | MC Phono Stage | 40dB |
| Line Amp | 18dB | Power Amp | 30dB |
| Power Amp | 30dB | Total Gain | 70dB |
| Total Gain = | 108dB | Required Attenuation | -5dB |
| Required Attenuation | -30dB | | |

Most Audio systems have far too much gain. The excess needs to be reduced by setting an attenuator by a typical -30dB. By reducing unneeded gain, the system does not need to work as hard, thereby achieving a more natural sound. The extra 25dB gain equates to about 20 times more work. Imagine working 20 times harder than you need to?

The limited attenuator has a major advantage over a passive attenuator. A passive attenuator typically has significant output impedance creating sensitivity to the particular type of output cable. The limited attenuator has much lower output impedance.

## Warranty Information

Fill out the enclosed warranty card and return it to us within 30 days with a copy of your sales receipt. The unit is fully warranted against failure for three years after purchase. The warranty covers parts and labor. Damage due to improper use, modifications or acts of nature are not covered by this warranty. We will not assume any liability for any damage to any other component in the system due to a failure in the SuperNova 2.

If you believe your SuperNova 2 is malfunctioning, please contact the dealer where you purchased the unit, or contact Musical Surroundings at:

telephone: (510) 547-5006 ext 101
fax: (510) 547-5009
email: service@musicalsurroundings.com

If the unit must be returned for repair, contact Musical Surroundings at the phone number above. A Return Authorization must be issued prior to you returning your SuperNova 2 for service.

For more information on the SuperNova 2 see the Musical Surroundings website at musicalsurroundings.com or Mike Yee's website at MichaelYeeAudio.com.