

These brief notes should help you get the most out of your Studio One preamp. Please read them carefully. We have tried to cover everything important, but if you desire further information, please write us.

Unpacking

Your Studio One is packed in a heavy, reusable shipping carton with molded foam end caps. The serial number on the carton should match the number on the warranty card and on the back panel of the unit. We urge you to save all the packing material in case you should find it necessary to ship your Studio One in the future.

Inspect the unit for any signs of physical damage. Each Studio One is carefully inspected at our plant and certified to be free of defects. Any damage is the responsibility of the freight carrier and should be reported to them immediately, as there are definite time limits for making claims.

We cannot ensure you proper warranty service unless you fill out the warranty card completely and return it promptly. We would also like to hear your opinion of the Studio One and learn what other components you are using it with.

Installation

The Studio One was purposely made as small as possible to allow it to be placed almost anywhere. We find it usually most convenient to place the Studio One on top of the power amplifier. The Studio One's internal shielding and common mode rejection prevent any hum pick-up in this or any other similar situation.

The Studio One operates just above body temperature during normal use. It feels warm to the touch after a few hours of operation. Since only a small air space around the unit is required to transfer heat away from the chassis, the Studio One can be installed in a tight or closed cabinet with no problem.

The Studio One can be rack mounted on standard 3½" centers with an optional rack mount kit. The wood end panels are removed and rack mount brackets are added, making the overall width 19".

Interconnections

Figure 1 shows the Studio One in a typical system connection. Note that all the preamp inputs are grouped to the right and all the outputs are grouped to the left. All the high level inputs have equal sensitivity, including the tape monitors (MON 1 and MON 2). All the input and output jacks use a common ground plane to reduce hum in complex hook-ups.

The switched AC outlets are relay controlled and can easily handle large power amps. All AC wiring should be routed away from the signal wiring to avoid hum. It is particularly important to keep the phono cables away from all power cords.

Both the phono preamp and the main outputs have a 500 ohm source impedance. This means they can drive a load capacitance of up to about 1000 pf without degrading high frequency performance. Normal 6' patch cords have a capacitance of about 250 pf. Most audio cable has about 40 pf per foot, so runs of up to 25' from the main preamp outputs are acceptable. Since the input switch connects high level sources directly to the tape outputs, the ability of the source components to drive long output cables should also be determined. The distance from the source to the Studio One plus the distance from the Studio One to the tape deck should not exceed the drive ability of the source.

The high output level (17 volts) and low output impedance (500 ohms) of the Studio One make it ideal for driving high impedance (above 1K ohm) headphones. An adapter cord can be used to connect headphones to the main outputs. Lower impedance 'phones are also acceptable, but will play at reduced levels. There is no danger of damaging the Studio One with any headphone since it is designed to drive a short circuit.

Controls

INPUT The input selector connects the source to the tape outputs and to the tape monitor switching section. In the PHONO position the output of the phono preamp is selected. In the other positions the signal is routed directly from the rear panel input jacks. The phono inputs are wired directly to the phono preamp, which is active at all times.

Professional source components cannot tolerate shorted outputs, so all inputs to the Studio One are non-shorting. Shorting plugs may be used to eliminate any possible crosstalk to unused inputs.

MON 1, MON 2 The tape monitor buttons allow the selection of either tape input without disturbing the signal path from the source selected on the input switch to the tape outputs. The tape monitor switches have no effect on the transfer function. If both tape monitor switches are pressed, only the number 2 inputs are selected.

TRANSFER The transfer function allows tape to tape dubbing. When the transfer button is pressed, both tape outputs are disconnected from the selected input. The RECORD 1 outputs are connected to the MON 2 inputs and vice versa. The two tape decks are then cross-connected, so dubbing in either direction is possible. The other functions of the Studio One are not affected. The source selected on the input switch or the tape deck selected on the tape monitor switches will still be routed to the main outputs. Note: When the transfer button is pressed, if the tape monitor buttons on both tape decks are in the source position, a signal loop will be created, and feedback may result.

MONO Mode switching occurs after the tape monitor section. When both MONO buttons are in the out position, normal stereo is selected. Pressing the left button sends a left only mono signal to both channels. The right button sends right only mono to both channels. If both buttons are pressed, left plus right mono mix is selected.

TONE The tone switch must be pressed to connect the tone controls to the circuit. When the button is out the tone control section is completely bypassed.

BASS, TREBLE The turnover controls select the frequency at which boost or cut will be 3 dB when the level control is fully rotated up or down. Up to 15 dB boost or cut is available, depending on the turnover frequency selected. The level calibrations correspond to the boost or cut at extreme high or extreme low frequencies. At subsonic and ultrasonic frequencies the tone control curve rolls off and drops to unity gain.

LF, HF The high and low active filters have a 2 pole Butterworth roll-off (12 dB per octave). When the low filter is activated, response drops 3 dB at 40 Hz. When the high filter is activated response drops 3 dB at 10kHz.

BALANCE The balance control has a slow taper, allowing for the easy correction of slight imbalances in source material or listening conditions.

-20 dB The muting switch activates a passive circuit before the gain control, dropping the output level of both channels by 20 dB. It has no sonic effect and can be used with the gain control in any useful combination.

GAIN The gain control adjusts the output level of both channels. It is calibrated in dB gain for a high level input (MON, AUX, TUNER). The maximum gain available is 20 dB.

POWER The power switch starts a chain reaction to properly sequence the system on or off. It switches a DC signal that activates the power supplies and closes the 20 amp AC relay activating the switched outlets. After a five second delay, the short is removed from the main outputs, thus activating them. On turnoff, the outputs are first shorted and then the AC power is removed.

Circuit description

The Studio One employs all discrete class A circuitry. Many of the design features of the Studio One, and ultimately its high sonic accuracy, are possible only through the use of discrete components, since it is impossible to modify the internal workings of an integrated circuit.

The phono preamp uses 11 transistors divided into three stages in each channel. The first stage insures proper cartridge loading. The second stage handles the lower portion of the RIAA curve. The upper portion is handled passively before the third stage, which acts as a buffer between the phono section and the line preamp. The phono preamp is three pole subsonic filtered. The three stage design and careful component selection keep noise to an absolute minimum.

In the line amp, a matched input pair drives a conversion circuit with full common mode rejection and a buffered output. Again class A operation is used. The noise level is as low as that of a 500 ohm resistor. A second buffer amp drives the line outputs and handles the high and low filters if they are used.

In the tone control amp, five transistors are used in a feedback shelving equalizer configuration with selectable turnover points. Use of the tone controls causes little or no sonic change, due to careful design and component selection.

All stages of the Studio One have good common mode rejection, but to insure undisturbed performance, dual fully regulated ± 30 volt power supplies are used. The Studio One is unaffected by 10% changes in line voltage. Supply ripple and noise is below 0.002 volts. All AC wiring is totally isolated from the signal stages. The power switch acts on DC voltages, and the switched outlets are controlled by a 20 amp relay.

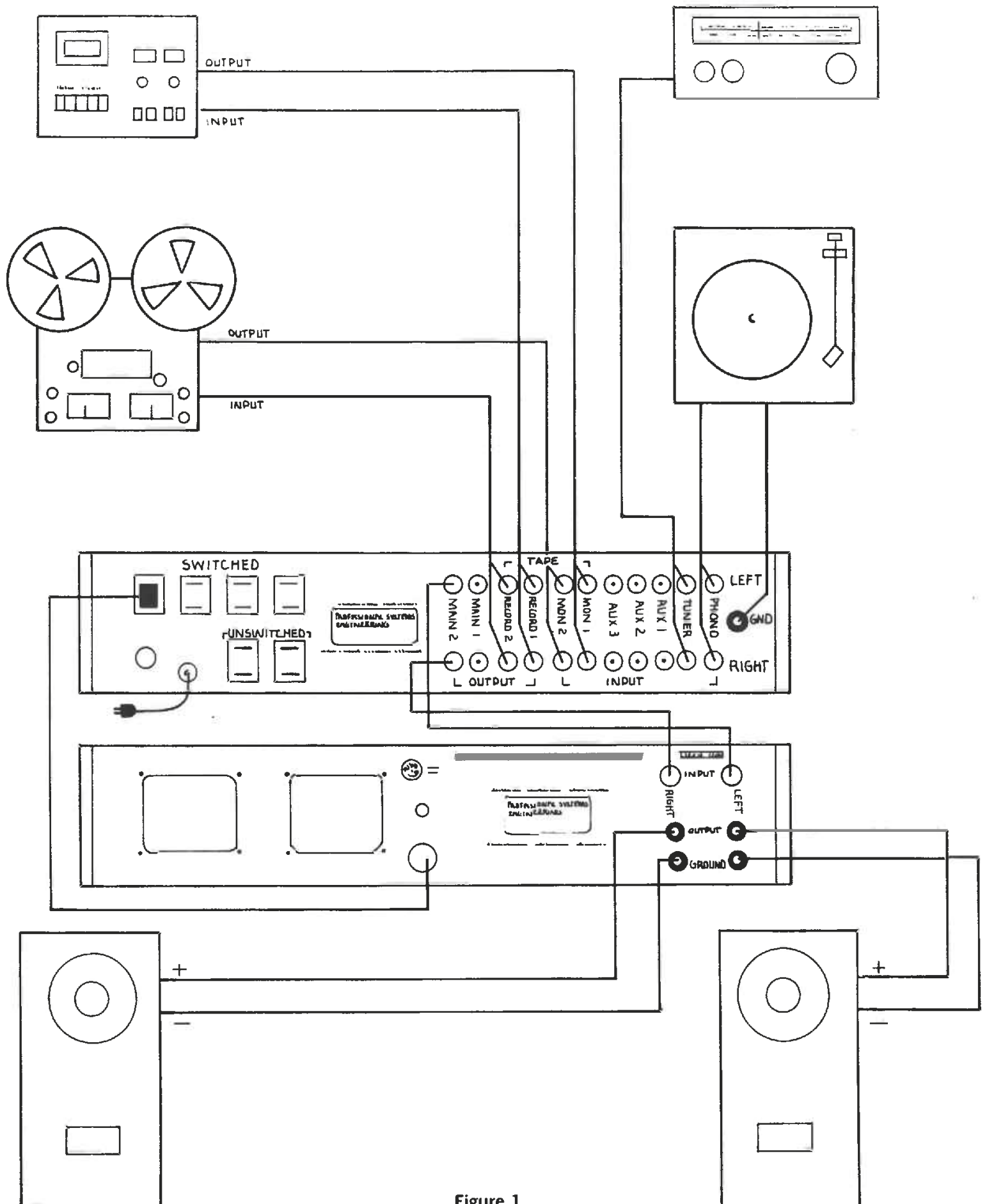


Figure 1.

In case of trouble

If you have trouble with your Studio One we are ready, with your help, to correct the problem. There are a few things you can do to help us remedy the situation as quickly as possible.

Check to be sure that the Studio One is the cause of the problem. You can check to see if power is reaching the unit by plugging an accessory into the unswitched outlets. Check the fuse. It can be replaced with either a 0.3 amp slow blow type or a 0.5 amp fast blow type. If the trouble occurs only in one channel, switch the output cables left to right. If the problem stays in the same channel, the power amp or the speakers are at fault. If the problem goes to the other channel, switch the input cables left to right. If the trouble stays in the same channel this time, the Studio One is at fault. If the difficulty occurs in both channels, and if you have a source component with output level controls, try plugging the source directly into the power amp. If you can't locate the cause of the problem, or if you determine that the Studio One is at fault, we'd like you to take some careful notes on the problem. This information will make it much easier for us to service your unit and get it back to you quickly. Please include the answers to these questions when you send the unit in for service.

1. Does the problem occur constantly or intermittently?
2. If you have intermittent trouble, how often does it occur? For how long?
3. What channel is affected?
4. What modes or sources are affected?
5. Must any of the controls be in any specific position for the trouble to occur? What position?
6. Tone controls on or off?
7. What are the symptoms in detail?

All units returned for service must be packed in the original carton, whether returned to the factory or to a local service center. The factory will not accept units for service unless they are shipped in the original packing material. Additional shipping cartons are available from the factory for \$7.00. If you prefer to have warranty service done at the factory, ship your unit to us insured and freight prepaid. We will return it to you freight prepaid within the 48 states. We are sorry, but we cannot accept parcel post shipments.

Shipping address:

Professional Systems Engineering
2021 West County Road C
St. Paul, Minnesota 55113

Maintenance

The Studio One is designed for trouble free operation. Even the pilot light should never need replacement. (It's a solid state LED.) The only things that might need periodic attention are the hardwood end panels and the front control panel.

The end panels are stained and oiled at our plant. To maintain their appearance we recommend the occasional light application of a good quality furniture oil. The panels can be easily removed for this purpose.

We recommend any popular window cleaning spray and a soft cloth for cleaning the front panel and knobs. Be sure not to let excess liquid run into the controls. Protect the end panels from water stains. A soft bristle brush is helpful for cleaning the knobs. Never use wax or abrasive cleaner on the front panel.

professional systems
engineering, inc.

2021 west county road c
saint paul, mn 55113

limited warranty

Professional Systems Engineering, Inc. warrants its products to be free of manufacturing defects for a period of three years. Professional Systems Engineering, Inc. or an authorized servicing agent will replace or repair defective components, modules, or units with equivalent new or rebuilt components without charge to the original owner subject to the following conditions and exclusions:

Conditions

1. Purchaser must return to Professional Systems Engineering, Inc. within 15 days of the original date of purchase a completed warranty registration card for validation. Information on the card must be complete and legible.
2. All warranty claims must be accompanied by the validated registration card and proof of purchase.
3. Warranty service is available only at authorized Professional Systems Engineering service stations.
4. All units returned to Professional Systems Engineering or its agents for repair must be packed in an original shipping carton.
5. All shipping costs must be prepaid and full insurance provided. All shipping costs and loss or damage claims are the responsibility of the purchaser.

Exclusions

1. This warranty does not cover defects or damage resulting from accident, misuse, abuse, lack of reasonable care, or normal wear.
2. This warranty is void if the serial number is defaced, altered, or removed.
3. This warranty is void if the unit is altered in any way. This includes the attachment of any accessory item or other component in other than the specified manner.
4. Warranty claims arising from improper service performed by any servicing agency are excluded.
5. This warranty is extended to the original registered owner only.
6. Damage caused by or to accessory items or other components associated with or connected to Professional Systems Engineering equipment is not covered under this warranty.
7. Professional Systems Engineering, Inc. is not responsible for accessory items shipped with equipment returned for warranty service.
8. This is not a service contract. This warranty does not cover cleaning, maintenance, and periodic check-ups.
9. Professional Systems Engineering, Inc. reserves the right to make changes and improvements in its products without any obligation to include these changes in previously manufactured units.
10. This warranty does not cover replacement of external fuses or apparent failures arising from improper operation, or incorrect interconnection of components, or incompatibility with other components or accessories.

Professional Systems Engineering, Inc. reserves the exclusive right to determine eligibility for warranty service under the conditions and exclusions stated above.

Except to the extent prohibited by applicable law, all implied warranties made by Professional Systems Engineering, Inc. in connection with this product, including warranties of merchantability or fitness, are limited to the warranty period set forth above, and no warranties, whether expressed or implied, including warranties of merchantability or fitness, shall apply to this product after said period has expired. The consumer's sole remedy shall be such repair or replacement as is expressly provided above; and under no circumstances shall Professional Systems Engineering, Inc. be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product.