





TECHNOLOGIES INC.

FET Phono Preamplifier 06x

OPERATION MANUAL



| | |
|----------------------------------|-----------|
| <u>SAFETY PRECAUTIONS</u> | <u>1</u> |
| <u>INTRODUCTION</u> | <u>2</u> |
| <u>DETAILED INSTALLATION</u> | <u>3</u> |
| <u>DESIGN PHILOSOPHY</u> | <u>6</u> |
| <u>TECHNICAL DATA</u> | <u>9</u> |
| <u>CARE & HANDLING</u> | <u>10</u> |
| <u>WARRANTY & DISCLAIMER</u> | <u>11</u> |
| <u>WARRANTY REGISTRATION</u> | <u>12</u> |

| | | |
|---|--|---|
| CAUTION | | |
|  | WARNING |  |
| CAUTION: TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. | | |
|  | THIS SYMBOL IS TO ALERT YOU OF THE PRESENCE OF UNINSULATED DANGEROUS VOLTAGE WITHIN THE UNIT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK. | |
|  | THIS SYMBOL IS INTENDED TO ALERT YOU OF THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE UNIT. | |

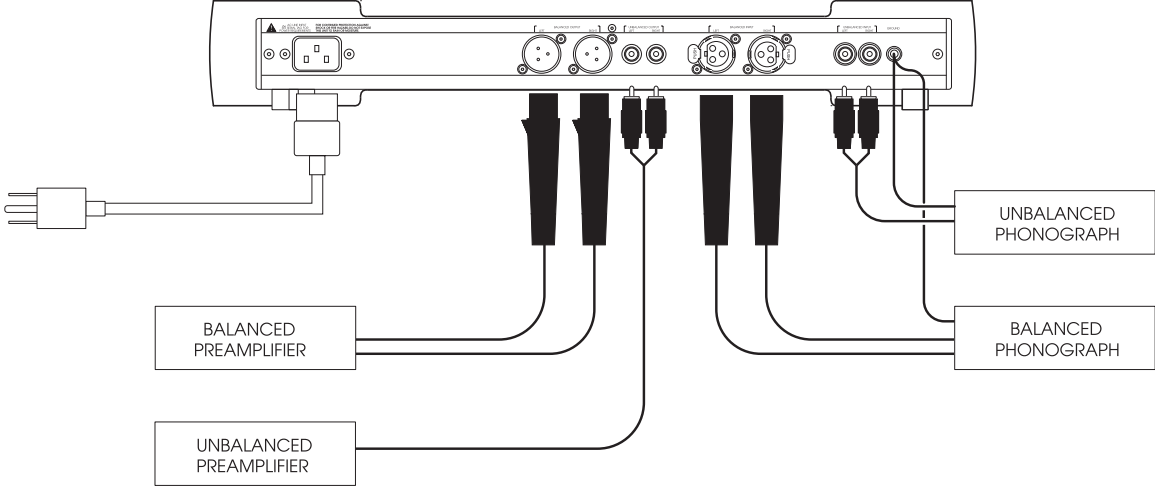
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. TO AVOID ELECTRICAL SHOCK, DO NOT OPEN THE UNIT. REFER SERVICING TO QUALIFIED PERSONNEL.

- CAUTION**
- Never install or remove the power cord from the chassis unless it has been disconnected from the AC power source first.
 - Never pull on the power cord when removing it from an AC power source. Grasp it by the plug.
 - Do not leave the power cord connected to an AC power source unless it is connected to the unit.
 - It is recommend that during extended periods of non-use that the units power cord be unplugged from its AC power source.
 - Route the AC power cord so that it will not be damaged or walked on.

Thank you for selecting Coda Technologies and our procession line of high definition, high value audio components. The Phono Preamplifier 06x is a precision device, designed in an effort to provide the listener with unmatched sound quality, design, and construction which will provide you with many years of listening enjoyment.

In order to operate your preamplifier properly and to realize all of the capabilities of the 06x, we recommend that you read this entire manual carefully to insure maximum benefit from your audio system.

The first section of the installation instructions for the 06x covers basic configuration of the preamplifier. These brief steps will bring the 06x into operation. Make sure during installation that the preamplifier and all other components of your audio system are unpowered. The diagram below shows the basic configuration, but we recommend you read the whole manual in detail to ensure the best performance out of your Coda equipment.



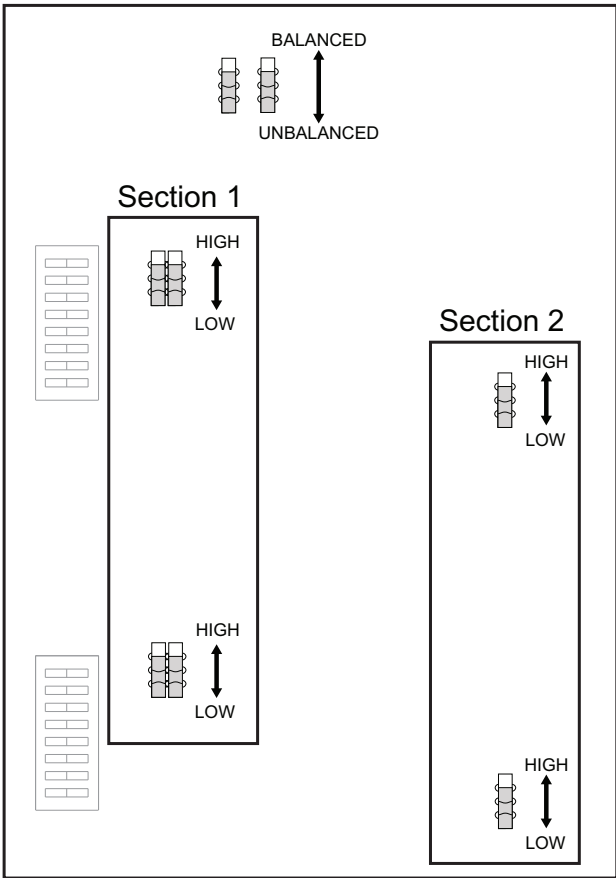
I. Chassis

WARNING: NEVER OPERATE THIS UNIT WITH THE TOP COVER REMOVED. NEVER MAKE ANY INTERNAL ADJUSTMENTS WHILE THIS UNIT IS CONNECTED TO AN AC POWER SOURCE.

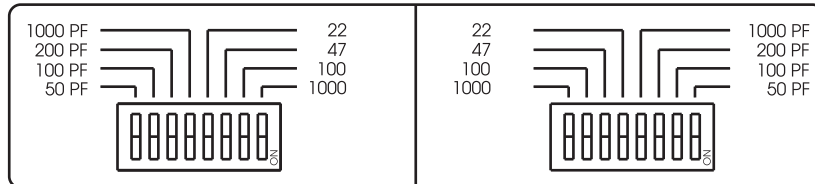
1. Prior to installing the unit some configuration can be made internally, including input selection and per-channel gain and loading. With the unit unplugged, remove the cover using the supplied Allen key. There are six gain switches split into two sections and two input selector switches. The input will be set from the factory to unbalanced and the gain will be set to the default low/low settings. Refer to the diagram below to identify the two gain sections and the settings for the input switches.

| Cartridge Type | Section 1 | Section 2 |
|---------------------------|-----------|-----------|
| High-output moving-magnet | Low | Low |
| Medium-output moving-coil | Low | High |
| Low-output moving-coil | High | Low |

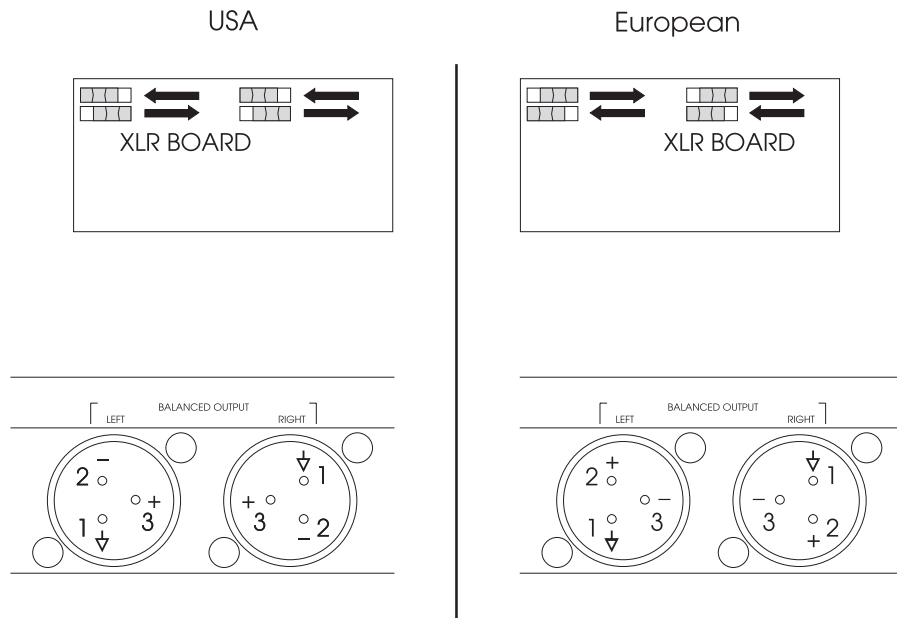
GAIN CONFIGURATION SWITCHES(MAINBOARD, LEFT END, TOP-DOWN VIEW)



2. In order to set the input loading you must toggle the DIP switches which are located on the main board of the preamplifier. Each one of these switches connects a resistor or capacitor in parallel with the input and so adjusts the load value. The default values are 47kΩ and 50pF. Refer to the diagram below, which is repeated inside the unit, to determine the values which need to be switched in for your cartridge. Replace the cover after setting the switches.



3. The balanced outputs are equipped with switchable phase due to differences in USA/European standards. The default setting is European but may be changed according to the following diagram. These switches can also be used to select absolute phase.



4. Although the 06x is generally resistant to electromagnetic interference it is recommended that the unit not be installed near any sources of strong electromagnetic fields.

5. Before installing the preamplifier make sure all of the power switches of any associated components are switched off. If any of your other audio components do not have power switches, make sure they are unplugged from their AC power source.

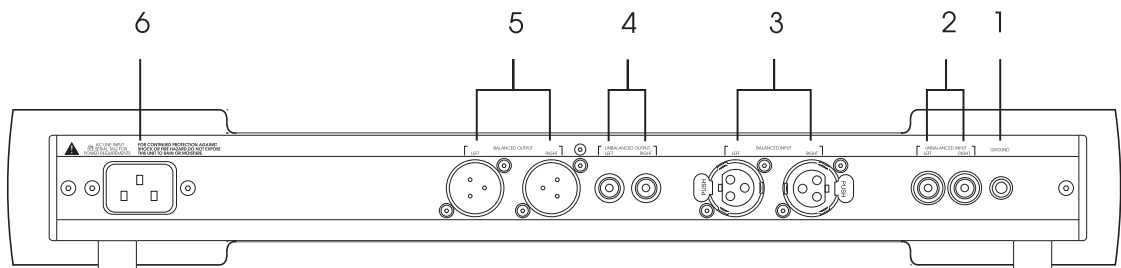
Note: THE LINE VOLTAGE OF THE PREAMPLIFIER 06x IS SWITCHABLE TO PERMIT USE IN DIFFERENT COUNTRIES. CONTACT CODA TECHNOLOGIES FOR INSTRUCTIONS ON CHANGING THE OPERATING VOLTAGE.

II. Source, Output and Power Connections

The input and output connections are marked on the rear lip of the top cover of the preamplifier. Remember when connecting input and output cables to avoid inadvertently swapping left / right channel connections. The connections are as follows:

1. Ground Post
2. Unbalanced Input
3. Balanced Input
4. Unbalanced Output
5. Balanced Output
6. AC Line Input

After connecting the audio input and output cables and AC line input the preamplifier will power on immediately; there is no power switch. The front-panel power LED will light to indicate the power is on.



III. Front Panel

There are no front-panel controls. All controls are inside and are to be selected prior to operation (see pages 4 and 5). The only function of the front panel is a power indicator LED, which back lights the window when the power is on.

Caution: If a power interruption occurs, turn down the volume of your audio system before power resumes. Sudden power surge can cause an output level spike which could cause damage to your audio system.

The circuitry utilized in your phono preamplifier is the result of an advanced and complete design process combining innovation and proven fundamentals. This process avoids both the limitations of total adherence to convention and the flaws resulting from inappropriate application of clever circuit gimmicks. Our approach demands painstaking consideration of every facet of each design choice regardless of how small. Analytical, as well as subjective techniques are all applied in an open-minded fashion with “no compromise” musical perfection as the goal. The resulting refinement of the product escapes simple explanation. With this in mind we present here a few design highlights and concepts.

Primary voltage gain is accomplished with FETs. While careful design can yield good results from any device type, FETs consistently have the edge in voltage gain and interface applications. This is borne out by superior sonic qualities observed in subjective testing. FETs are inherently transconductance devices, meaning that an input voltage controls an output current. In other words, it “senses” the audio signal without drawing substantial current from the source to provide an output. This eliminates complex interactions with the source allowing maximum performance from each system element and greatly reducing the chance of cable characteristics altering the sound. The absence of input current in FETs also allows high bias currents for linearity and speed without sacrificing DC parameters.

While excellent capacitors for coupling use exist, there can be no doubt that a signal path free of coupling capacitors yields the best possible signal integrity. The DC stability of the circuit eliminates the need for any questionable DC servo circuits or input or output coupling capacitors. We make no AC compromises for DC performance, however. Our key design choices provide not only inherent DC stability but also optimized AC performance throughout the audio region and well beyond. These choices include the use of top quality dual FETs in a differential configuration. Because the signal in these stages is handled in a balanced manner, rejection of unwanted noise and modulation from external sources is extremely high. This rejection extends even to noise which may originate within the circuit from support circuitry such as current sources. Stray RF signals are also rejected well.

Since the necessary equalization requires the use of capacitors, we use only high grade film-type capacitors. These and other equalization components were carefully chosen to maintain response to within .2dB of RIAA standards. An additional subsonic rolloff at 14Hz serves to reduce IM distortion. Noise is kept low by multiple paralleling of input devices, careful selection of circuit impedances, and pre-screening of devices.

The class-A complimentary followers used to drive the preamplifier output are of such speed, linearity and low output impedance that no feedback correction is required or used. The advantage of this is that the circuit’s perfect stability and transient response are preserved into a wide range of difficult and unpredictable loads. Variation in sound which could occur through interactions with interconnect cables and other system elements are thus avoided. A simple, very high performance inverter provides a fully balanced output on the phono preamplifier which allows the user to take advantage of the balanced inputs on many preamplifiers. The most commonly acknowledged advantage of this is rejection of stray noise pickup, but improvements in distortion and bandwidth may occur also.

The requirements of a power supply for flawless audio reproduction are straightforward but important. The supplies in the 06x take a very direct approach to high performance. First, a top quality shielded toroid transformer with plenty of reserve current capability is used. The shielding eliminates strong fields which could induce hum into sensitive circuitry. About 25,000 uF of capacitance with very low ESR and inductance provides good passive filtering.

A reference voltage is developed by delivering a constant current to zener diodes. The resulting voltage is heavily filtered and delivered to each stage through independent class-A followers which completely decouples the stages. The resulting non-reactive low impedance over an extremely wide bandwidth yields a perfect power source for the individual circuits. The simplicity and absolute stability of the supplies removes the chance of unpredictable interactions which may occur with the more elaborate, high-feedback circuitry often used in similar equipment.

Most companies in the upper end of the audio industry use either sheet metal or formed aluminum chassis. By contrast, the O6x has all structural parts made of machined extruded aluminum. The advantage of this over an all-stamped chassis is that the machined metal can be worked more precisely, allowing us to work on tighter tolerances and use PC-mounted parts more easily. Moreover, such a design allows easier servicing either for repair or for future upgrades. From the standpoint of appearance a machined surface can be contoured in a far more pleasant manner giving the final product a more seamless appearance.

The amplifier's chassis is made from heavy-gauge steel with a half-inch machined aluminum faceplate. All exterior metal parts are anodized or powder coated for durability.

Printed circuit boards are fiberglass epoxy with gold plating over a tin/nickel barrier. The gold layer will not corrode, while the barrier layer prevents the gold from migrating to the lower copper layer.

All resistors are precision metal film; 1% tolerance for 1/4-watt and 5% tolerance for 1-watt.

Capacitors have been eliminated wherever possible. No electrolytic capacitors are used except in the power supply, where several high-capacitance electrolytics provide outstanding filtering of the supply output.

All semiconductor devices are of very high grade. Voltage gain is accomplished with an extremely high-quality, matched dual FET, chosen for its exceptionally low noise characteristics.

All audio input and output connector contacts are gold-plated, and XLR receptacles are manufactured by Neutrik of Switzerland. Wire is used as little as possible in the signal path - only to connect the RCA jacks and speaker terminals to the circuit board - and what is used is 141-strand silver-plated copper with silicone insulation.

Circuit Specifications

| | |
|---------------------|---|
| Frequency Response: | +/- .2dB of RIAA with subsonic roll off @ 14Hz |
| Distortion: | < .01% from 20Hz to 20kHz @ 3V peak into 600Ω or higher shunted by 100pf or less. |
| Gain: | unbalanced output - 37dB @ 1kHz balanced output - 46dB @ 1kHz |
| Maximum Output: | 12V peak |
| Noise: | >87dB referenced to 1V output |
| Input Capacitance: | 100pF to 1000pF |
| Input Impedance: | 22Ω to 47kΩ |
| Output Impedance: | 75Ω non-reactive unbalanced 150Ω non-reactive balanced |
| Crosstalk: | 70dB @ 20kHz |

Power Supply

Independently regulated with shielded toroidal transformer and 25,000uF of capacitance

Dimensions

| | |
|---------|--------------------------------|
| Height: | 2.5" Faceplate, 2.85" Overall |
| Width: | 18.0" Faceplate, 17.0" Chassis |
| Depth: | 9.75" Overall |
| Weight: | 14 lbs. Shipping |

The interior of the unit requires no special care. If it becomes necessary to clean the exterior, a simple dusting may be all that is required. If a cleaner is necessary, any dilute commercial ammonia based product will be appropriate. NEVER use any abrasive rags, cleaners or chemical solvents on Coda products.

When handling the unit, take care not to mar the aluminum. Aluminum is a medium hardness metal and can be scratched by the harder tool steels.

Avoid exposing the unit to direct sunlight, and keep it away from sources of intense heat.

Do not throw away the carton or associated packing material. They are ideal if you need to pack the unit for moving and in the unlikely event that servicing is needed, they will be necessary for safe shipment.

Be sure to provide adequate insurance when shipping.

I. Warranty - Any failure of the Phono Preamplifier 06x, hereafter known as the product or original product, to operate or to meet specifications, applicable at time of manufacture, due to a manufacturing defect or component failure, will be corrected by Coda Technologies without charge for parts or labor, for a period of ten years from date of original purchase. Coda Technologies will provide for surface transportation to and from the factory for a period of one year from date of original purchase.

II. Procedure - If the product should require service under warranty contact Coda Technologies at the location on the back cover of this manual for shipping instructions. Products purchased outside of the United States will be covered by the warranty conditions extended by the importing distributor which may differ from those given above.

III. Exclusion of Coverage - Coda Technologies is not obligated to service the product in certain conditions, as according to the following subsections.

- a. The product has been damaged through:
 - i. operation not in accordance with the instructions in this manual
 - ii. abuse, tampering, modification or accident
 - iii. serial number defacement

B. The product has been transferred to a third party. In this case the warranty is valid for 5 years from date of manufacture as determined from the serial number

- c. The product has been transported outside of the United States of America. In these conditions any service will be made at Coda Technologies sole option.

IV. Total Loss and Replacement - If the product is submitted for service due to a severe malfunction which has caused damage sufficient enough to make a repair attempt infeasible, the product will be replaced with another unit of equal or superior specifications. Coda Technologies product line is frequently updated and changed, and the specific model and version of the original product may be discontinued at any time without notice. In this case no guarantees are made that the replacement unit will be visually similar to the original product.

V. Subjective Differences - No guarantee is made that the product will perform to any specifications that cannot be measured and confirmed with precision audio analysis equipment. Coda Technologies is only obligated to make repairs which will bring the product into compliance with the specifications stated in this manual.

VI. Unnecessary Service - In all conditions, if the product is submitted for service and found to be operated without fault and within specifications, shipping charges will be billed to the customer.

This warranty gives you specific legal rights. You may have other rights which vary from state to state.

Disclaimer - Coda Technologies cannot be held responsible for any damage caused by their products, including but not limited to:

- a. Damage to speakers caused by failure of a Coda Technologies product to mute or disable itself as expected or described in its manual.
- b. Damage caused by connecting a load to a Coda Technologies product having an improper impedance as described in the products manual.
- c. Damage caused by defects in design, construction or component quality.

Fill in this registration sheet and fax or mail it to Coda Technologies to ensure you are in our warranty system. This will facilitate warranty service should it become necessary.

It is recommended that you retain a copy of this form for your own records. Coda Technologies' address and fax number are located on the back of this manual.

MODEL DESIGNATION: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

PLACE OF PURCHASE

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

OWNER INFORMATION

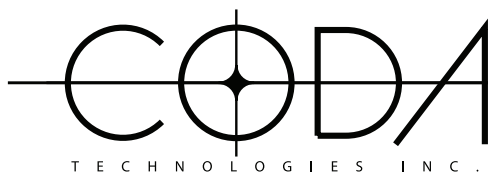
Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

NOTES: _____



7850 CUCAMONGA AVENUE #34
SACRAMENTO, CA 95826 USA

Phone **+01 916.383.3653**
on the web at **CODA.CC**
email us at **info@codacc**