



# **EP84**

## **Operating Manual**

## **SAFETY INSTRUCTIONS**

**CAUTION:** To reduce the risk of electrical shock, do not remove the cover or rear panel of this unit. Do not expose this appliance to rain or moisture. No user serviceable parts inside. Please refer servicing to qualified personnel only.

### **Retain Instructions:**

Please retain all safety and operating instructions for future reference.

### **Ventilation:**

Do not impede the flow of air through the ventilation openings. Take care when selecting appropriate installation locations so obstacles do not obscure proper ventilation.

### **Heat:**

This product should be situated away from other heat sources such as fire, high heat emitting devices, heaters, etc.

### **Power Source:**

Make sure the product is set to the correct voltage for the location in which it is being used.

### **Grounding and Polarization:**

Never defeat the products power grounding means.

### **Power-Cord Protection:**

Power supply cords should be connected or placed in a fashion that could allow possible exposure to damage. Take care to avoid wear and tear, rubbing, squashing, etc.

### **Cleaning:**

The product should be cleaned only with a soft cloth. Do not use any corrosive products on the unit.

### **Inactivity:**

The power cord of the product should be unplugged from the outlet when left unused for a long period of time.

### **Service requirement:**

Service by qualified service personnel when:

- The power supply cable has been damaged in any way
- Liquid has been spilled onto or into the product
- The product has been exposed to rain
- The product exhibits faults or obvious performance degradation
- The product has been damaged in a way that exposes components

The user should not attempt to service this product beyond what is described in this operating manual. All other servicing should be referred to qualified service personnel.

## **EP84 Main Features**

The EP84 is a professional multi-channel microphone preamplifier featuring:

- 8 x discrete microphone preamplifiers
- Modular PCB design
- Ultra-wide dynamic range
- Low-noise operating Levels
- + 48V Phantom power per channel
- -20dB PAD per channel
- Phase reverse per channel
- Gain control per channel
- Peak LED indicator per channel
- 80 Hz low-cut (high-pass) filter per channel
- Optional ADAT interface available (PR8IIA)

## **FOREWORD**

Dear Customer,

Firstly, we would like to thank you for purchasing our EP84 multi-channel microphone pre-amplifier. With much thought and effort, our engineers have developed a product we know you will be satisfied with. We always guarantee you uncompromising quality as well as excellent audio properties at an affordable price.

Please read this manual thoroughly to best understand the safety and operational procedures of the EP84.

Enjoy!

Regards,

SM ProAudio

*\* It should be pointed out, that extreme output volumes may damage your ears and/or your head-phone units. Turn down the LEVEL controls before you switch on the unit.*

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## **1. INTRODUCTION**

In purchasing the new EP84, you have acquired a multi-channel microphone/instrument pre-amplifier of high class that meets the demands of the home and professional studio.

A modular designed unit, the EP84 features eight individual channels of professional quality microphone pre-amplification in a solid 2RU rack-mountable format. Each channel features its own level control, 20dB pad, phantom power, low-cut (high-pass) filter, phase reverse, and LED peak level indicator. Eight professional combo connector inputs (XLR & ¼" TS) are provided on the front panel, whilst balanced XLR and unbalanced ¼" TS connectors can be found on the rear panel. Inserts are also provided for each other independent eight channels for simple integration of additional outboard equipment (noise gates, expanders, compressors, etc.).

The EP84 also has provision for the optional installation of SM Pro Audio's PR8IIA ADAT output interface (ask your dealer!). The PR8IIA can provide users with the ability to output eight (8) channels in ADAT optical light-pipe format. The PR8IIA ADAT output board is perfect for users wanting to interface or add eight (8) additional channels of quality pre-amplification to a variety of digital devices such as digital mixers, audio recording interfaces, etc.

## **2. THE DESIGN**

### **2.1 High quality components and design**

The philosophy behind SM Pro Audio products guarantees a no-compromise circuit design and fault-tolerant component selection. All SM Pro Audio products go through a rigorous planning and production procedure from start to finish.

### **2.2 Inputs and outputs**

All inputs and outputs are secured firmly to the exterior chassis housing thus ensuring robust quality and confidence under all conditions.

## **3. INSTALLATION**

Your SM Pro Audio EP84 was carefully packed in the factory and the packaging was designed to protect the unit from rough handling. Nevertheless, we recommend that you carefully examine the packaging and its contents for any signs of physical damage, which may have occurred in transit.

*\* If you happen to receive a damaged unit, please notify your dealer and the shipping company immediately.*

### **3.1 What's included in the box**

You should have the following included inside your shipping box:

- 1 x EP84 Multi-channel microphone preamplifier
- 1 x Power cable
- 1 x Operational user guide (the one you are reading!)

### **3.2 Rack-mount installation**

The SM Pro Audio EP84 can be used stand alone on your desktop, however it is best installed into "two" standard 19" compatible audio rack-mount unit spaces.

Please remove all cables (including power) before installing the EP84 into your audio rack.

Sturdy rack mounting ears are present on each side of the EP84's front panel. Simply mount the EP84 into an available 2 rack-space position and secure with rack-mount bolts/screws.



EP84 front panel

\* *Note: Please take into consideration ventilation of your equipment. A well-ventilated equipment rack will ensure optimum operation and longevity of your equipment. It's often a good idea to leave 1 free rack-bay position between your equipment to allow ventilation. As to avoid overheating, please do not place the EP84 on high temperature devices such as power amplifiers.*

### 3.3 Mains Voltage & front panel power switch

#### Mains Voltage

*Important - Before you connect your EP84 to the mains power supply, please make sure that your local voltage matches the voltage required by the unit!*



The EP84 has a professional internal power supply suitable for operation between AC 110/115v – AC 220/230/240v. A voltage configuration switch on the left hand side of the rear panel should be set to match the appropriate voltage of your mains power supply. Simply slide the selector switch with your finger or a small flat-blade screwdriver to either the 110v or 220v position to configure the unit accordingly.

To connect the EP84 to your mains power source simply connect the included standard IEC mains power cable to the EP84's three (3) pin power connector socket.

#### Power on/off switch & LED power indicator

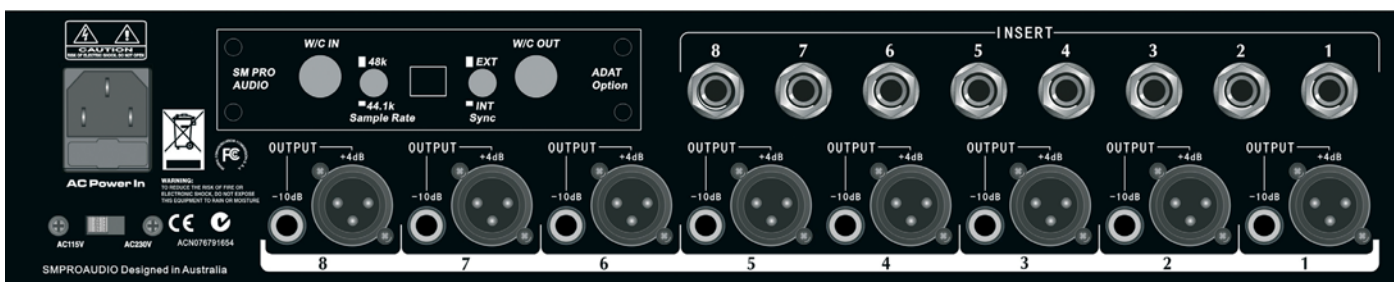
The EP84's power switch can be found on the right hand side of the front panel. To enable power to the EP84 or 'turn on' simply place the power on/off switch into the down position. The LED power indicator will illuminate to indicate the EP84's operational state as 'on' and ready for operation.

To power down or 'turn off' the EP84, simply place the power on/off switch into the up position. The LED power indicator will not illuminate to indicate the EP84's operational state as 'off'.



\* *It's always good practice to protect your ears, and other audio equipment by taking appropriate care when powering up any audio equipment. Being aware of your gain structure, and performing a structured power up sequence with your equipment will help to avoid unexpected audio signals bursts. It's a good idea to power up devices in sequence from the start of the signal chain to the end of the signal chain (EP84 -> recording device -> power amplifier/active monitors).*

## 3.4 Audio Connections



EP84 rear panel

### Analog Inputs

8 x combo (XLR & TS) input connectors can be found on the front panel. These are the direct analog inputs to the EP84's 8 individual preamplifier modules. Input your audio source material via either XLR or ¼" TS cable connectors.

### Analog outputs

Both balanced +4dB XLR and unbalanced -10dB ¼" TS analog output connectors are provided for each of the eight (8) preamplifier channels. Individual output levels can be controlled via the associated channels rotary gain control encoder on the front panel.

### Insert Points

Each channel of the EP84 features a ¼" TRS insert connector. Typically, inserts are useful when integrating additional outboard equipment (noise gates, expanders, compressors, etc.) in-line with your audio source material. By using a stereo 1/4" TRS audio insert cable you can insert external devices directly into the signal path of any of the eight audio channels.

## 4. FRONT PANEL CONTROLS & INDICATORS



### 4.1 Independent (8x) rotary preamplifier gain controls

Each channel features a rotary gain control for variable adjustment of the desired pre-amplifier level. 60dB of variable gain is available per channel. Clockwise rotation increases the gain, whereas anti-clockwise rotation decreases the gain.

*\* Always begin using the EP84 with all gain controls set to the minimum value. This way you can increase each channel gain gradually to the desired level without experiencing possible unwanted and unexpected loud signal surprises to both you and the rest of your audio equipment!*

### 4.2 Independent (8x) -20dB PAD switches

A -20dB PAD switch is provided for each channel to allow a twenty (20) decibel gain reduction of the incoming signal if desired/required. When enabled the corresponding -20dB PAD LED will illuminate.

*\* This function is useful when connecting extremely "hot" signals. Excessive signal input levels can overdrive the EP84's pre-amplifier input stage resulting in unwanted signal distortion. The PAD switch allows -20dB of gain attenuation/reduction to compensate for this situation prior to finer pre-amplifier gain adjustment.*

### 4.3 Independent (8x) phantom power +48v switches

Each channel of the EP84 features a phantom power switch to facilitate enabling or disabling of 48v of continuous power supply to the channel. When enabled the corresponding phantom power LED will illuminate.

*\* Phantom power is a voltage distribution system utilizing standard microphone cable. It is useful (and often required) for powering condenser microphones connected to your audio system. If any of your microphones require phantom power, simply enable the corresponding channels phantom power switch to activate a constant 48v power supply.*

#### **4.4 Independent (8x) 80Hz low-cut (high-pass) filter switches**

The EP84's eight (8) low-cut (high-pass) filter switches enable and disable each channels respective 80Hz high-pass filter. Engaging this filter effectively removes low frequency "rumble" and other unwanted noise by attenuating the signal dB below 80Hz. When enabled the corresponding low-cut LED will illuminate.

*\* The low-cut (high-pass) filter feature is useful in eliminating low frequency noise such floor rumble often picked up through microphone stands.*

#### **4.5 Independent (8x) phase reversal switches**

Each channel features a phase reverse switch for reversing the phase of the audio signal 180 degrees. When enabled the corresponding phase reversal LED will illuminate.

*\* Phase cancellation can be a serious problem during the recording process. Two out of phase sound waves that are summed together will cause some level of phase cancellation resulting in less amplitude, severe tonal variations, and a distorted perceived overall quality of the sound. This is especially of concern when recording two microphones within close proximity. In this instance, activating the phase reverse switch on one of the microphone channels will help avoid phase cancellation issues.*

*The phase reverse switch is also extremely handy when used to correct inverted XLR pin wiring configurations.*

#### **4.6 Independent (8x) peak indicator LED's**

Each channel features a peak light LED indicator. This momentarily indicates when the input signal strength has reached optimum input level.

*\* A continuously illuminated peak LED indicates you have surpassed optimum input level and distortion of the respective channels audio signal will occur. It's time to adjust your gain structure!*

## **5. APPLICATION**

### **5.1 General use of the EP84**

Four simple stages:

*Evaluate your application and make decisions*

- Firstly, you need to know what you are trying to pre-amplify. It maybe a single microphone signal, multiple microphone signals, or line level signal that requires strengthening. What types of microphones are going to be used? Do the microphones require phantom power? Will low frequency sound waves need to be minimized? Is there the possibility of phase cancellation issues arising? These types of questions must be answered if you are to correctly configure the EP84 for successful operation and performance. Once you have a good idea what you are trying to achieve, you can make the necessary connections, and configure the EP84's channel settings with confidence.



## Make the necessary connections

- Connect your desired source signals to the EP84 via the front panel COMBO connectors (either XLR or 1/4" jack connector).
- If you would like to insert an external processor (ie. Compressor, EQ, etc) in the channels audio signal path, connect the outboard device using a standard 1/4" TRS insert cable.
- Make the necessary connections from the corresponding channel outputs on the rear of the EP84 to your desired destination inputs (Mixer, recorder, etc). You can choose between either the XLR balanced +4dB outputs or the unbalanced -10dB line level 1/4" jack outputs. Both outputs carry signal simultaneously.

## Configure your channel settings and gain structure appropriately

- Set all your gain controls to minimum. This is the best place to start prior to adjustment of all your settings.
- Enable phantom power per channel as required. Typically, condenser microphones that do not have a power supply or battery will require phantom power. Dynamic microphones or line level signals from a keyboards output will not require phantom power. Each respective channels phantom power LED will illuminate to indicate the phantom power status as "enabled".
- Enable the low-cut filter per channel if desired. If you decided that low-cut filtering was desirable simply depress the respective channels low-cut filter switch. Each respective channels low-cut filter LED will illuminate to indicate the filter status as "enabled".
- Enable the phase reverse function per channel as required. This is especially important when using multiple microphones in close proximity. If you require the signal to be phase inverted, depress the phase reverse switch for the appropriate channel. Each respective channels phase reverse LED will illuminate to indicate the phase reverse status as "enabled".
- With the channel gain set to minimum, raise the rotary gain control slowly to reach the desired input level. A good input level will illuminate the peak LED briefly on very strong input signals only. Continuous peak LED illumination indicates an overloaded distorted signal and should be adjusted accordingly to a more appropriate level.
- If a continuously overloaded channels input gain cannot be reduced sufficiently with the rotary gain control alone, the -20 dB PAD switch will be required to compensate. With a -20dB reduction in gain attenuating the signal, you will now have a greater ability to set an appropriate gain structure with the rotary gain control.
- Setting levels on the pre-amp itself is important, however it is equally important to check the incoming level at the inputs of your destination device (mixer, DAW recorder, etc.).

## 5.3 PR8IIA - Optional ADAT output module

The PR8IIA is an optional output module that can be fitted to the EP84 to provide pristine 24 bit digital conversion of your analog preamplifier to an ADAT digital format stream. Perfect for use with ADAT compatible mixers, multi-track recorders, ADAT PC audio cards, or other professional ADAT compatible devices, the PR8IIA upgrades your EP84 to fit seamlessly into the digital world.

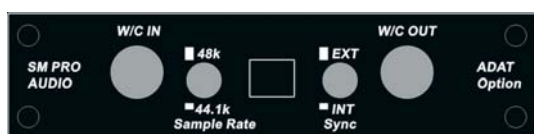


Image of PR8IIA above is subject to change.

Many of today's computer based digital recording interfaces feature a mixture of both analog and digital inputs and outputs. Often systems may only be able to input 8 analog sources to the system simultaneously. Additional inputs may be provided in the form of an 8 channel digital ADAT format input. This is where a unit like the EP84 fitted with the PR8IIA

module really shines. Simply connect the ADAT output of the PR8IIA to the ADAT input on your audio interface to achieve another 8 channels of pristine input to your system. The PR8IIA offers internal or external sync selectors, word clock I/O connections, and a sample rate selector switch (44.1/48kHz).

Note: Both analog outputs from the EP84 and the PR8IIA's ADAT digital output function simultaneously.

Enhance the front end of any ADAT compatible multi-track digital recording system with the PR8IIA. Ask your dealer for more information.

## **6. SPECIFICATIONS**

### **MIC INPUTS**

Connector: XLR on COMBO  
Type: Balanced  
Impedance: 47K Ohms  
Min sensitivity: -60 dB  
Peak input level: +9.5 dB

### **LINE INPUTS**

Connector: ¼" on COMBO  
Type: Balanced  
Impedance: 47K  
Min sensitivity: -35dB  
Peak input level: +32 dB

### **AUDIO INSERTS**

Type: ¼" TRS insert connector

### **OUTPUT**

Connector: ¼" TS jack, XLR  
Type: unbalanced, balanced  
Impedance: 600 Ohms  
Peak output level: +23dB  
Frequency response: 20Hz- 20KHz 0dB- -0.5dB  
Distortion: 0.005%  
S/N: > 105dB  
Crosstalk rejection: >120dB @1KHz; -20dB input  
Max Gain: 60dB

### **POWER**

Type: Internal 110v-220v

SM Pro Audio is constantly striving to maintain the highest professional standards. Modifications may be made over time to improve the performance and operation of this unit. As such, specifications and appearance may differ from those listed or shown.

## **7. WARRANTY**

### **7.1 WARRANTY CARD &/OR WEBSITE REGISTRATION**

To be protected by this warranty the purchaser of the product must complete an SM Pro Audio product registration procedure.

Product registration is available via two methods:

- Complete and return the enclosed warranty card within 14 days of the date of purchase to SM Pro Audio (see address below).
- Complete an online product registration form at the SM Pro Audio website. [www.smproaudio.com](http://www.smproaudio.com)

### **7.2 WARRANTY**

- SM Pro Audio warrants the mechanical and electronic components of this product to be free of defects in material and workmanship for a period of one (1) year from the original date of purchase. SM Pro Audio will at its sole discretion either repair or replace the product if any defects occur that are not caused by normal wear or inappropriate use within the warranty period.
- This warranty does not apply if the product has been damaged by negligence, non-authorized modifications, accident, abuse, misuse, misapplication, or as a result of unauthorized service other than performed by that of SM Pro Audio's service department.
- All freight charges incurred for transport of justified warranty claims are at the buyer's expense. All other warranty claims other than those indicated above are excluded.

### **7.3 HOW TO REQUEST A RETURN AUTHORIZATION NUMBER**

To obtain warranty service, the purchaser must call SM Pro Audio during normal business hours before returning the product (Tel.: +61 3 9555 8081). An SM Pro Audio representative will discuss any issues with you over the telephone and then issue a return authorization number if deemed appropriate.

Please ship original shipping cartons along with your return authorization number to the following address:

SM Pro Audio  
Service Department  
Warehouse 25  
Roberna Business Park  
26-28 Roberna St  
Moorabbin 3189  
Melbourne, Victoria  
Australia

#### **7.4 WARRANTY REGULATIONS**

- Warranty can only be serviced when accompanying proof of purchase is provided. Dealers invoice and date stamp required.
- SM Pro Audio will endeavor to repair or replace any product under the terms of this warranty within 30 days of receipt of the product at SM Pro Audio.
- Modifications performed in order to comply with any applicable technical or safety standards in any country which is not the country for which the product was originally developed and manufactured shall not be considered a defect in materials or workmanship. SM Pro Audio shall not be held responsible for any costs incurred or resulting from any such modification whether performed correctly or not.
- This warranty does not cover defects of parts caused by normal operational wear. These parts are typically switches, knobs, and other similar components.

Product damage caused by the following conditions are not covered by this warranty:

- Operation of the unit in a way that does not comply with the safety regulations applicable in the country where the product is used.
- Damages or defects caused by conditions beyond the control of SM Pro Audio.

#### **7.5 WARRANTY TRANSFERABILITY**

This warranty is non transferable and available exclusively to the original purchaser.

#### **7.6 DAMAGE CLAIMS**

Failure of SM Pro Audio to provide proper warranty service does not entitle the purchaser to claim further damages. SM Pro Audio's liability shall in no way exceed the invoiced value of the product.

#### **7.7 OTHER WARRANTY RIGHTS**

This warranty does not exclude or limit any statutory rights provided by national law.

The information contained in this manual is subject to change without notice.

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