

# EPSILON LIMITED 4000

16 IN/2 OUT SUMMING MIXER



# OPERATOR'S MANUAL

Version 1.2

**KAHAYAN**<sup>®</sup>  
P R O A U D I O

Avd. de la Estación 4, local bajo  
Zarzalejo, Madrid 28293  
Spain  
[admin@kahayan.es](mailto:admin@kahayan.es)

[www.kahayan.es](http://www.kahayan.es)

## TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS.....	3
INTRODUCTION.....	4
SETUP AND BASIC ASPECTS.....	5
SATURATION.....	7
SPECIFICATIONS & WARRANTY.....	9
CREDITS.....:	10

## IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions
2. Keep these instructions
3. Heed all warnings
4. Follow all instructions
5. Do not use this apparatus near water
6. Clean only with dry cloth
7. Install in accordance with the manufacturer's instructions
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat
9. Protect the power cord from being walked on or pinched particularly at plugs and the point where they exit from the apparatus
10. Unplug this apparatus during lightning storms or when unused for long periods of time
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped

## INTRODUCTION

The Epsilon limited 4000 is a 16 channel summing mixer that has included the same bus circuit that you find in our solid 4000 expansions.

So for limited budget studios is the perfect solution for achieve the classic 'glue' and warm sound of the classic consoles.

All components are hand-selected one by one. The Assembly is completely handmade. And Furthermore the unit was conceived as a Summing Bus and can be used as mastering equipment using only two channels.

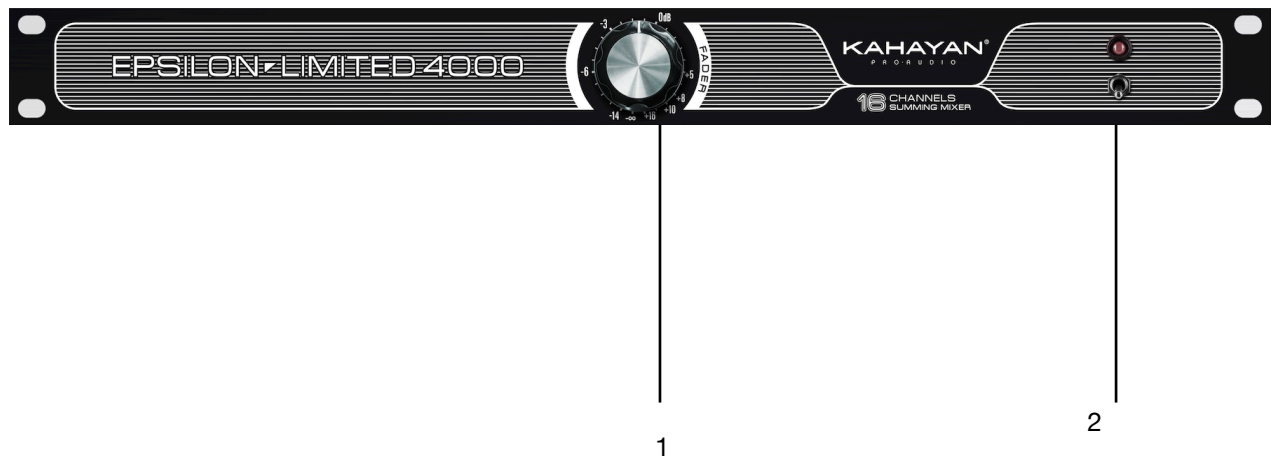
### HEATING AND WARM-UP

It is advisable to wait a minute after turning it on, to modify the gain and output levels, this way avoiding any noise generated by the lack of capacitor charging. An effect that may damage the reference speakers.

For more information please visit: [www.kahayan.es](http://www.kahayan.es)

## SETUP AND BASIC ASPECTS

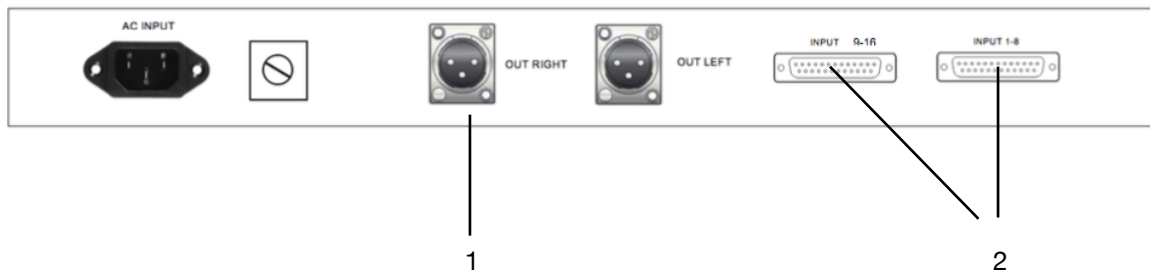
Front panel:



**1. Master fader:** The Master Fader allows to attenuate or enhance the stereo mix at  $-\infty$  dB to +3 dB.

**2. On/off power switch:** Switches the power on or off.

Rear panel:

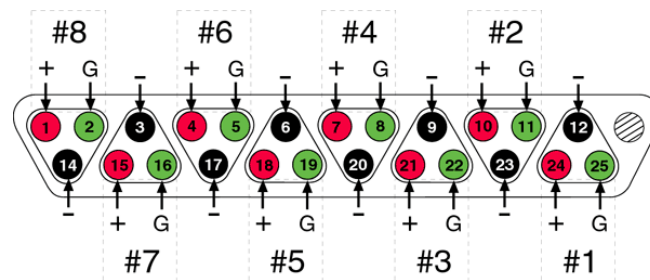


**1. Main outputs:** 1-2 Main outputs on XLR.

**2. Input 1-16:** DB25 connectors that received the 16 channels.

By default all the channels are setup by these way: The odd channels (1,3,5...) face **left** and the even channels (2,4,6...) face **right**.

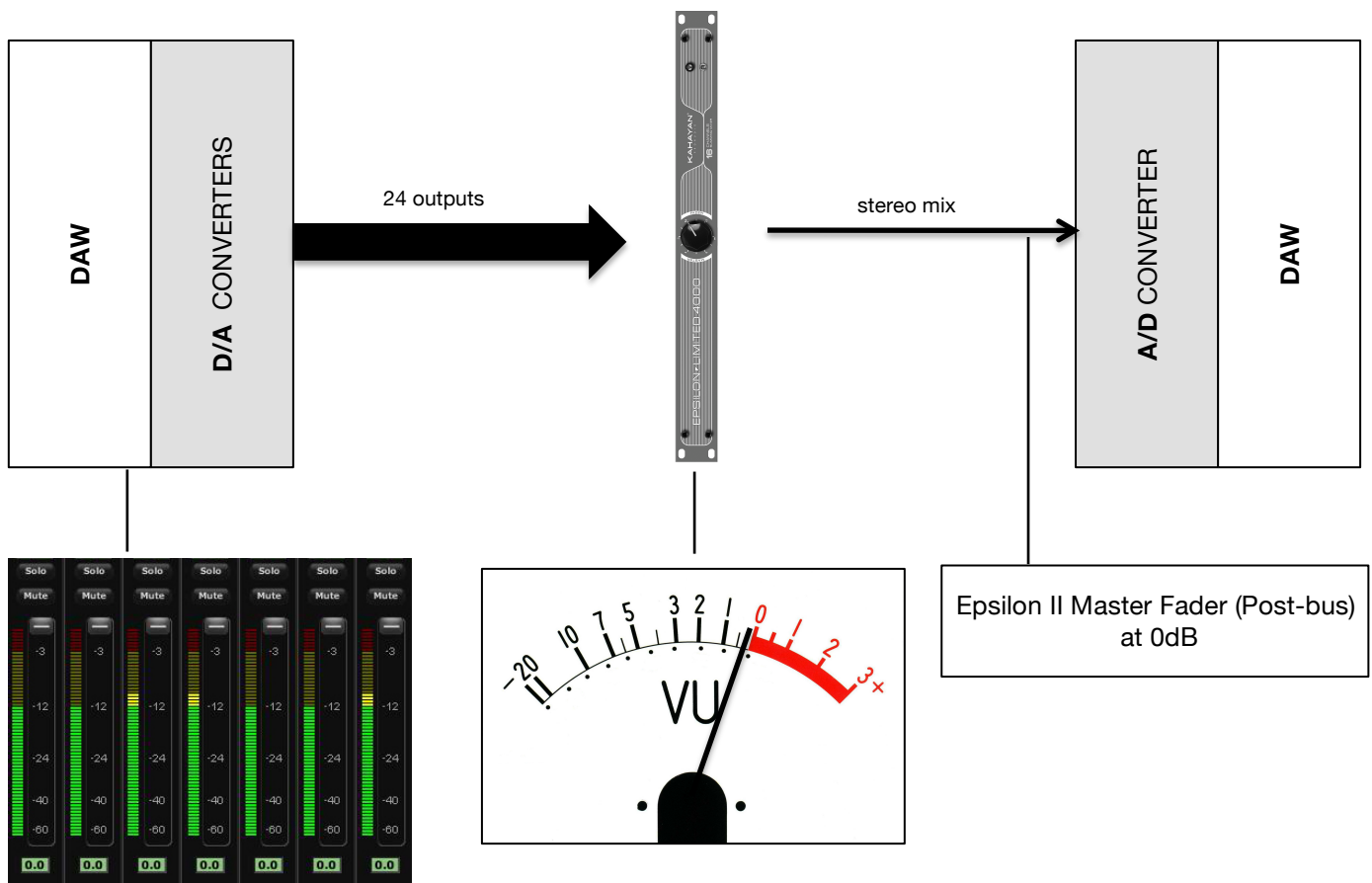
**Note:** All the DB25 connectors use the Tascam® format with the following configuration:



## SATURATION

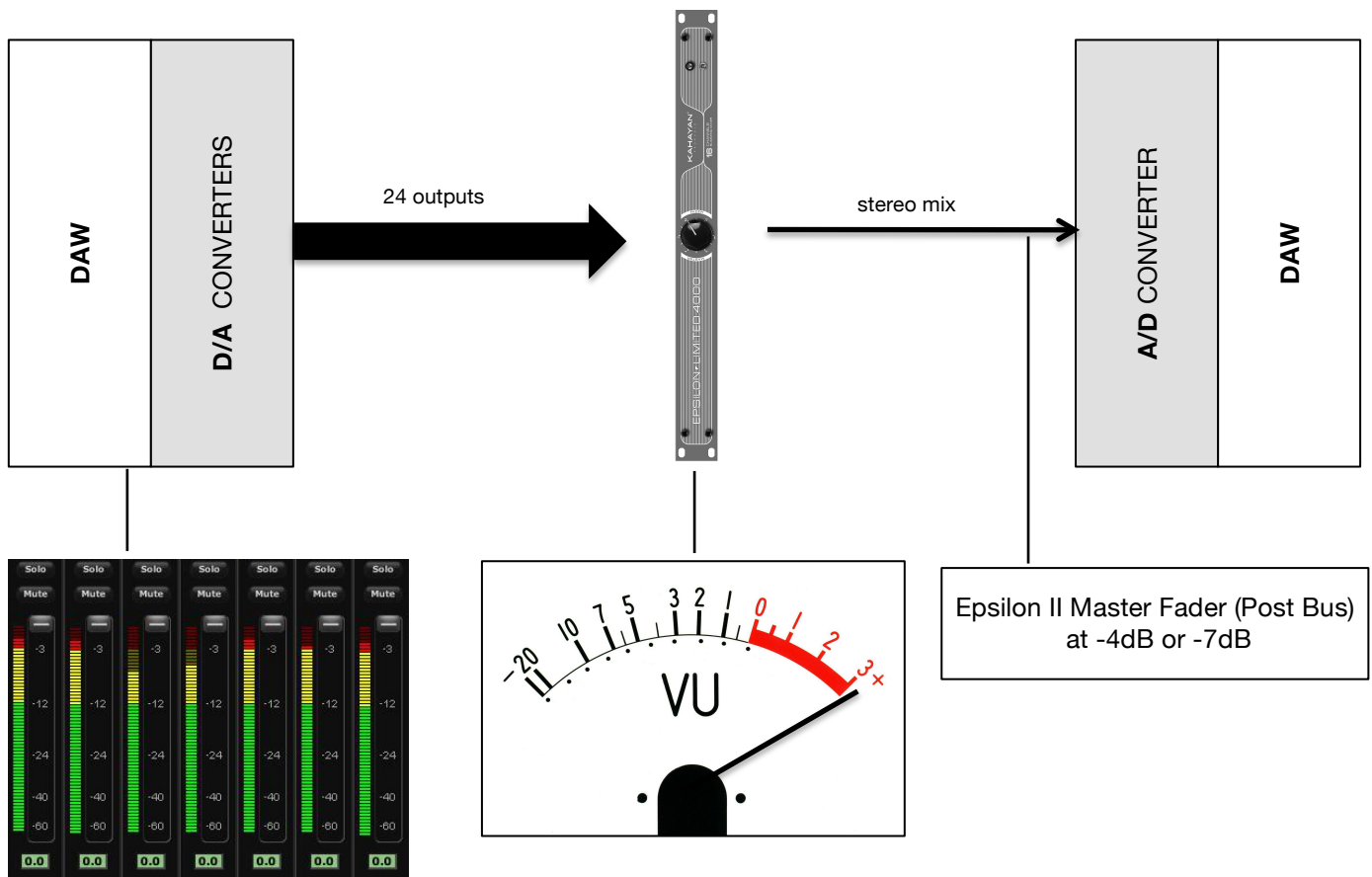
Many important mixing engineers use analog consoles for comfort and also for the capacity to saturate the console summing bus. When we speak about creating a mix with “punch”, “glue” or “impact”, we are speaking largely about the effects of the console analog saturation. So, exactly the same occurs with the Epsilon. When we saturate the Epsilon summing bus the same effects appear as when using an analog console.

In the following diagram we have showed an example of a **“clean” non-saturated mix**:



In a “clean” mix the DAW output levels are normal or “low”. Inside our summing bus the signal levels will be close to 0VU=+4dBu and the Epsilon II master fader doesn't require attenuation, it's positioned at 0dB. **Remember:** the master fader is post-summing bus.

In the following diagram we have showed an example of a “**saturated**” mix:



In a “saturated” mix the DAW output levels are “high”. Inside our summing bus the signal levels will be off the scale and the Epsilon master fader requires attenuation. This is the same situation when using an analog console the master vumeters are off scale. The Epsilon requires that the master fader attenuate the output levels to send the mix to DAW or other analog gear.

**Note:** To saturate Epsilon with a higher dBu level we recommend 3 options available to the user:

- 1-Calibrate the D/A converters to produce a higher level=change the dBFs/dBu relation.
- 2-Force the digital levels inside the DAW.
- 3-Insert analog gear which provides more volume.

**Conclusion:** Use the “saturation mode” that sounds best in your opinion...



## SPECIFICATIONS

- Analog Summing 16 Channels
- 16 balanced inputs on DB25
- 1 MAIN balanced outputs on XLR
- Headroom: +24dBu
- 220/110 volts and 50/60 Hz
- Weight: 3Kg
- The manufacturer reserves the right to change the technical specification of the product without prior notice.

## WARRANTY

These products are guaranteed for a period of two years from the date of shipment to the end user for countries of the European Union. For other countries, please refer to the law in effect.

During the warranty period Kahayan Pro-Audio will, at their discretion, either repair or replace products which prove to be defective, provided that the product is returned to an authorised Kahayan service facility. The warranty will not cover shipping the unit back to the Kahayan service facility, unless the customer determines otherwise with his dealer/distributor.

Defects caused by unauthorised modifications, accident, negligence or any misuse are not covered by this warranty. For further information please contact your dealer or the distributor in your country.

## NOTICE OF COPYRIGHT AND OWNERSHIP

All designs, circuit board artwork, front panel artwork, text contained herein and therein, and all other intellectual material is the sole property of Pablo Kahayan from Kahayan Audio. Unauthorized use, distribution, reproduction, etc. is strictly prohibited. Kahayan intellectual property is protected by international copyright laws. Violators will be prosecuted to the fullest extent of all applicable laws.

Transfer of ownership of this unit neither confers nor implies any transfer of ownership of the intellectual property, proprietary design, etc. contained herein.

## CREDITS

Concept: Pablo Kahayan

Written by: Pablo Kahayan, Luis del Toro and Adam W.

Edited by: Luis del Toro and Pablo Kahayan

Additional editing: José Herranz

Photos and Recall sheet: José Herranz