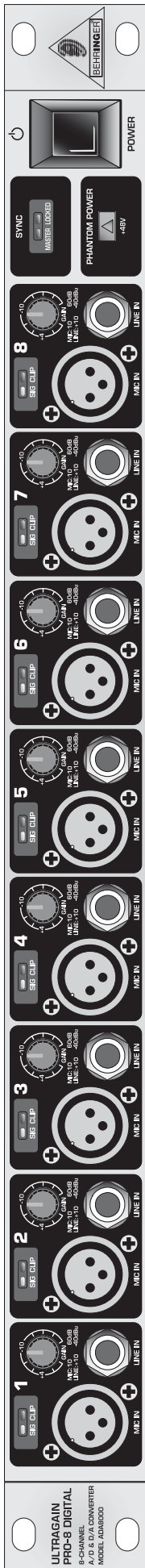


# ULTRAGAIN PRO-8 DIGITAL ADA8000



[www.behringer.com](http://www.behringer.com)

## User's Manual

Version 1.0 December 2002

ENGLISH



# ULTRAGAIN PRO-8 DIGITAL ADA8000

## SAFETY PRECAUTIONS



**CAUTION:** To reduce the risk of electric shock, do not remove the cover (or back). No user serviceable parts inside; refer servicing to qualified personnel.

**WARNING:** To reduce the risk of fire or electric shock, do not expose this device to rain and moisture.



This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure—voltage that may be sufficient to constitute a risk of shock.



This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.

## DETAILED SAFETY INSTRUCTIONS:

All the safety and operation instructions should be read before the device is operated.

### Retain Instructions:

The safety and operating instructions should be retained for future reference.

### Heed Warnings:

All warnings on the device and in the operating instructions should be adhered to.

### Follow instructions:

All operation and user instructions should be followed.

### Water and Moisture:

The device should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool etc.).

### Ventilation:

The device should be situated so that its location or position does not interfere with its proper ventilation. For example, the device should not be placed on a bed, sofa, rug, or similar surface that may block the ventilation openings, or used in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

### Heat:

The device should be situated away from heat sources such as radiators, heat registers, stoves, or other devices (including amplifiers) that produce heat.

### Power Source:

The device should only be connected to a power supply of the type described in the operating instructions or on the device.

### Grounding or Polarization:

This device must be grounded.

### Power Cords:

Power cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, sockets, outlets and the point where they exit from the device.

### Cleaning:

The device should be cleaned only as recommended by the manufacturer.

### Non-use Periods:

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

### Debris and Liquid Entry:

Debris and/or liquids should be kept from entering the enclosure through openings.

### Damage Requiring Service:

The device should be serviced by qualified service personnel when:

- ▲ The power cord or the plug has been damaged; or
- ▲ Debris or liquid has entered the device; or
- ▲ The device has been exposed to rain; or
- ▲ The device does not appear to operate normally or exhibits a marked change in performance; or
- ▲ The device has been dropped, or the enclosure damaged.

### Servicing:

The user should not attempt to service the device beyond that which is described in the operating instructions. All other servicing should be referred to qualified service personnel.

## ULTRAGAIN PRO-8 DIGITAL ADA8000

High-end 8-channel A/D & D/A converter with premium mic preamplifiers and ADAT® interface



▲ Ultra high-quality 8-channel A/D & D/A converter for virtually any digital recording/mixing environment

▲ 8 new state-of-the-art, studio-grade IMP “Invisible” Mic Preamps

▲ Phantom power on all microphone inputs

▲ The perfect expansion for BEHRINGER’s digital mixing console DDX3216

▲ High-end 24-bit A/D and D/A converters for ultimate signal purity

▲ Processes 44.1 and 48 kHz sample rates

▲ External sample rate synchronization via wordclock or ADAT® input

▲ Optical ADAT® IN/OUT interface for ultimate compatibility

▲ ADAT® input can be routed to all line outputs

▲ All mic/line inputs are routed to the ADAT® output

▲ Master/locked (slave) LED display easily visible on the front panel

▲ Extremely rugged construction ensures long life even under the most demanding conditions

▲ Manufactured under ISO9000 certified management system

ADA8000

# ULTRAGAIN PRO-8 DIGITAL ADA8000

## FOREWORD



Dear Customer,

welcome to the team of BEHRINGER users, and thank you very much for expressing your confidence in us by purchasing the ADA8000.

Writing this foreword for you gives me great pleasure, because it represents the culmination of many months of hard work delivered by our engineering team to achieve a very ambitious goal: to present you with an outstanding device that gives you maximum flexibility and performance in both studio

and home recording environments. The task of designing our new ADA8000 certainly meant a great deal of responsibility, which we assumed by focusing on you, the discerning user and musician. Meeting your expectations also meant a lot of work and night shifts. But it was fun, too. Developing a product usually brings a lot of people together, and what a great feeling it is when all who participated in such a project can be proud of what they've achieved.

It is our philosophy to share our enjoyment with you, because you are the most important member of the BEHRINGER team. With your highly competent suggestions for new products you've made a significant contribution to shaping our company and making it successful. In return, we guarantee you uncompromising quality (manufactured under ISO9000 certified management system) as well as excellent technical and audio properties at an extremely reasonable price. All of this will enable you to give free rein to your creativity without being hampered by budget constraints.

We are often asked how we manage to produce such high-quality devices at such unbelievably low prices. The answer is quite simple: it's you, our customers! Many satisfied customers mean large sales volumes enabling us to get better purchasing terms for components, etc. Isn't it only fair to pass this benefit on to you? Because we know that your success is our success too!

I would like to thank all of you who have made the ADA8000 possible. You have all made your own personal contributions, from the developers to the many other employees at this company, and to you, the BEHRINGER user.

My friends, it's been worth the effort!

Thank you very much,

Uli Behringer

## TABLE OF CONTENTS

1. INTRODUCTION .....	4
1.1 Before you get started .....	5
1.1.1 Shipment .....	5
1.1.2 Initial operation .....	5
1.1.3 Warranty .....	5
2. CONTROL ELEMENTS .....	5
3. APPLICATIONS .....	6
4. AUDIO CONNECTIONS .....	6
5. SPECIFICATIONS .....	7
6. WARRANTY .....	8

## 1. INTRODUCTION


Congratulations! With the ADA8000, you have acquired a high-end device that perfectly supports you when it comes to creative signal routing. Thanks to its professional features, the ADA8000 ensures outstanding performance, be it in the professional or home recording studio. Last but not least, you will surely appreciate the ADA8000's versatility on stage.

Your ADA8000 is a state-of-the-art 8-channel A/D and D/A converter. This ultra-compact 19" unit gives you the opportunity to connect analog audio signals directly to, say a multitrack recorder via the integrated ADAT® interface. For this purpose, the ADA8000 deserves one rack space only. In return, you can even connect the digital signal of a multitracker via ADAT® to the eight analog line outputs of your ADA8000. Signal conversion can be processed at 44.1 or 48 kHz with 24-bit resolution. The ADAT® inputs and outputs can be operated independently as long as there is an identical wordclock signal. The integrated A/D and D/A converters ensure optimal signal conversion without any distortion or signal deterioration.

### IMP "INVISIBLE" MIC PREAMP

The microphone channels are fitted with BEHRINGER's brand new high-end IMP INVISIBLE MIC PREAMPS that boast the following features:

- 130 dB dynamic range for an incredible amount of headroom,
- ▲ a bandwidth ranging from below 10 Hz to over 200 kHz for crystal-clear reproduction of even the finest nuances,
- ▲ the extremely low-noise and distortionless circuitry guarantees absolutely natural and transparent signal reproduction,
- ▲ they are perfectly matched to every conceivable microphone with up to 60 dB gain and +48 volt phantom power supply and
- ▲ they enable full utilisation of the greatly extended dynamic range of your 24-bit/192 kHz HD recorder, thereby maintaining optimal audio quality.

 **The following user's manual is intended to familiarize you with the unit's control elements, so that you can master all the functions. After having thoroughly read the user's manual, store it at a safe place for future reference.**

# ULTRAGAIN PRO-8 DIGITAL ADA8000

## 1.1 Before you get started

### 1.1.1 Shipment

The ADA8000 was carefully packed at the assembly plant to assure secure transport. Should the condition of the cardboard box suggest that damage may have taken place, please inspect the unit immediately and look for physical indications of damage.

**Damaged units should NEVER be sent directly to us. Please inform the dealer from whom you acquired the unit immediately as well as the transportation company from which you took delivery of the unit. Otherwise, all claims for replacement/repair may be rendered invalid.**

### 1.1.2 Initial operation

Please make sure the unit is provided with sufficient ventilation, and never place the ADA8000 on top of an amplifier or in the vicinity of a heater to avoid the risk of overheating.

**Before plugging the unit into a power socket, please make sure you have selected the correct voltage:**

The fuse compartment near the power plug socket contains three triangular markings. Two of these triangles are opposite one another. The voltage indicated adjacent to these markings is the voltage to which your unit has been set up, and can be altered by rotating the fuse compartment by 180°. **ATTENTION: This does not apply to export models that were for example manufactured only for use with 120 V!**

**If you alter the unit's voltage, you must change the fuses accordingly. The correct value of the fuses needed can be found in the chapter "TECHNICAL DATA".**

**Faulty fuses must be replaced with fuses of appropriate rating without exception! The correct value of the fuses needed can be found in the chapter "TECHNICAL DATA".**

Power is delivered via the cable enclosed with the unit. All required safety precautions have been adhered to.

**Please make sure that the unit is grounded at all times. For your own protection, you should never tamper with the grounding of the cable or the unit itself.**

### 1.1.3 Warranty

Please take a few minutes and send us the completely filled out warranty card within 14 days of the date of purchase. You may also register online at [www.behringer.com](http://www.behringer.com). The serial number needed for the registration is located at the top of the unit. Failure to register your product may void future warranty claims.

## 2. CONTROL ELEMENTS

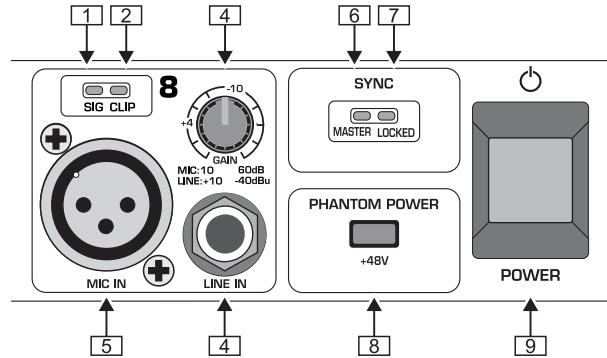


Fig. 2.1: ADA8000 channel section

The ADA8000 features eight identical channels. Each section comprises a microphone input (on a balanced XLR connector) and a line-level input (on a balanced 1/4" TRS jack). We recommend connecting only one input signal per channel. When two input signals are connected, the weaker signal is suppressed and will be audible as interference noise.

- 1 The *SIG* LED lights up when a signal is present at one of the inputs.
  - 2 If the input level is too high, the *CLIP* LED lights up. The *CLIP* LED should light up only with signal peaks but never all the time.
  - 3 Use the *GAIN* control to set the input gain. The gain ranges from +10 to +60 dB. The *GAIN* control governs both the *LINE IN* and the *MIC IN* input.
  - 4 This is the balanced 1/4" TRS *LINE IN* connector. A connected analog *LINE IN* or *MIC IN* signal is not routed to the analog *LINE OUT* connector [16]. Instead, it will reach the ADAT® *OUT* interface.
  - 5 This is the balanced *MIC IN* XLR connector. For example, you can connect your microphone here.
  - 6 As long as the ADA8000 functions as master, sending a clock signal, the *SYNC MASTER* LED lights up. The appropriate setting can be made on the rear (see [15]).
  - 7 When the ADA8000 is synchronized externally (either ADAT® or wordclock IN), the *SYNC LOCKED*-LED lights up.
  - 8 Press the +48 V switch to provide condenser microphones which are connected to the *MIC IN* inputs with the required phantom power. Dynamic microphones do not require this external power supply. When the switch is depressed, phantom power is active on all inputs.
- Please mute your amplifier(s) before activating the phantom power. Otherwise, switch-on thumps may be audible on your loudspeakers/headphones.**
- 9 The *POWER* switch powers the ADA8000 on. You should always make sure that the *POWER* switch is in the "Off" position when initially connecting the unit to the mains.
- Please take note: Merely switching the unit off does not mean that it is fully disconnected from the mains. When not using the unit for prolonged periods of time, please unplug the unit's power cord from the power outlet.**

# ULTRAGAIN PRO-8 DIGITAL ADA8000

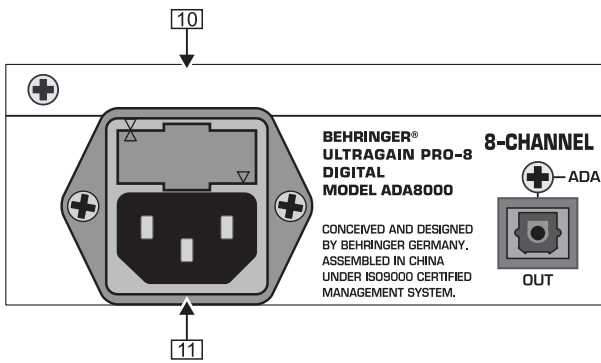


Fig. 2.2: Mains supply and fuse compartment

- 10** **FUSE COMPARTMENT / VOLTAGE SELECTION.** Before connecting the unit to a power outlet, please make sure that the selected voltage matches your local voltage. When replacing fuses, please make sure that you always use fuses of the same type. Some units allow for switching between 230 V und 120 V. Please note: when connecting a unit intended for the European market to a 120 V power outlet, you must also replace the factory fuse with a higher-value fuse.
- 11** Power is supplied via an IEC connector. The matching cable is provided with the unit.

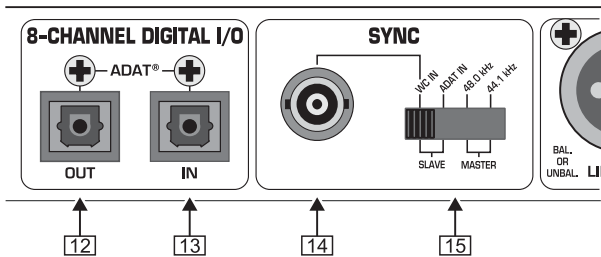


Fig. 2.3: ADAT® IN/OUT and wordclock SYNC

- 12** All analog input signals are converted into the standard ADAT® format and can be taken at the 8-CHANNEL DIGITAL OUT. This output can be used to feed an ADAT® recorder or any other device featuring an ADAT® input. Please note that a signal present at the DIGITAL IN will not be routed to the DIGITAL OUT.
- 13** At the 8-CHANNEL DIGITAL IN, you can connect an ADAT® device. The signal will automatically be routed to the 8 analog LINE OUT connectors.
- 14** Use the WC IN connector to connect devices for the external synchronization of your ADA8000. This BNC connector is only active, when the respective setting on the rear is made (see [15]). When, for example, various devices are interconnected in a digital recording system with, say, a digital mixing console, all digital units connected have to be synchronized via a shared wordclock signal.
- 15** The setting of this switch depends on the application of your ADA8000. If an external ADAT® recorder is supposed to send the wordclock signal (in this case, the ADA8000 functions as SLAVE), the switch has to be set to the ADAT IN position. Please also note the instructions given in the user's manual of your ADAT® device. When your ADA8000 functions as MASTER (here, the ADA8000 sends the wordclock signal) please use the switch to select the sampling rate of your choice (either 44,1 or 48 kHz).
- 16** Your ADA8000 features eight LINE OUTs on balanced XLR connectors. An input signal present at the ADAT IN will automatically be transferred into eight independent signals and routed to the eight analog LINE OUT connectors.

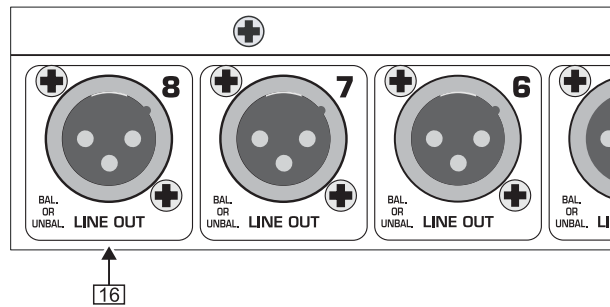


Fig. 2.4: LINE OUT connectors

## 3. APPLICATIONS

Your ADA8000 is an ideal expansion for BEHRINGER's digital mixing console DDX3216, which features an optional ADAT® interface. Thanks to the ADA8000, this digital mixer can be expanded by eight additional analog inputs and outputs. Sound cards featuring ADAT® INs and OUTs receive eight first-class analog inputs and outputs with the ADA8000. What's more, the eight "Invisible" Mic Preamps perfectly enable direct recording to digital multitrackers (e.g. ADAT®). Last but not least, you can also use the ADA8000's audio channels to create a live surround mix.

## 4. AUDIO CONNECTIONS

You will need many different cables for the various applications. The following illustrations show how these cables should be laid out.

Please use exclusively high-grade cables. The audio connectors of your ADA8000 are electronically balanced and ensure automatic hum and noise reduction.

Needless to say, even devices with unbalanced outputs can be connected to the balanced in/outputs of your ADA8000. For this purpose, please use either mono plugs or connect the ring of stereo plugs with the sleeve (when using XLR connectors, pin 1 and pin 3 have to be bridged).

**⚠ Please ensure that only qualified personnel install and operate the ADA8000. During installation and operation the user must have sufficient electrical contact to earth. Electrostatic charges might affect the operation of the unit.**

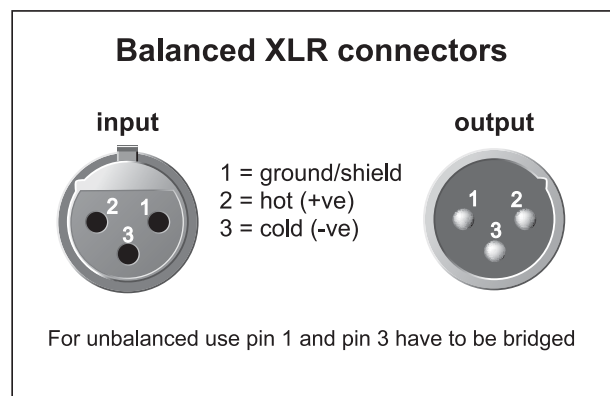


Fig. 4.1: XLR connectors

# ULTRAGAIN PRO-8 DIGITAL ADA8000

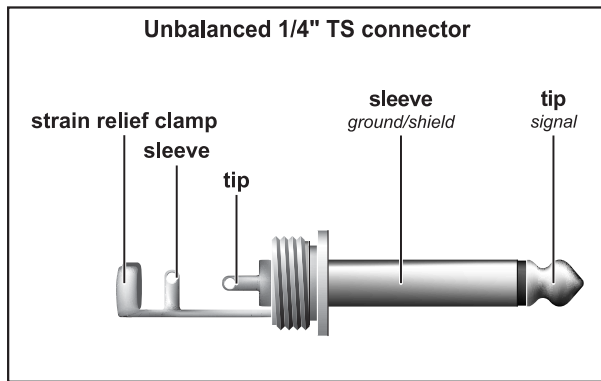
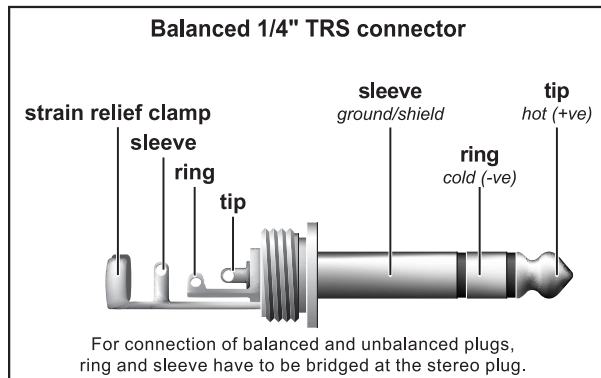


Fig. 4.2: 1/4" TS connector



For connection of balanced and unbalanced plugs, ring and sleeve have to be bridged at the stereo plug.

Fig. 4.3: 1/4" TRS connector

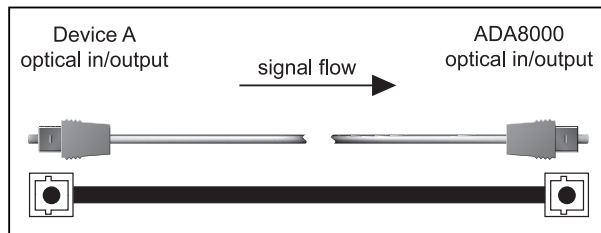


Fig. 4.4: Connecting the ADA8000 optically via Toslink

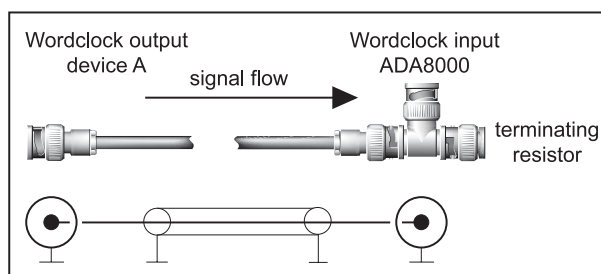


Fig. 4.5: Unbalanced connection (termination) of the ADA8000's wordclock input

## 5. SPECIFICATIONS

### MICROPHONE INPUTS

Type	Electronically balanced, discrete input circuitry
Gain range	+10 to +60 dB
Max. input level	+6 dBu @ +10 dB gain for 0 dBFS
Impedance	approx. 2 k $\Omega$ balanced
Phantom power	+48 V, switchable

### LINE INPUTS

Type	1/4" TRS connector, electronically balanced, discrete input circuitry
Impedance	approx. 20 k $\Omega$ balanced, approx. 10 k $\Omega$ unbalanced
Gain range	-10 to +40 dB
Max. input level	+26 dBu @ -10 dB gain for 0 dBFS

### LINE OUTPUTS

Type	XLR, electronically balanced
Impedance	approx. 500 $\Omega$ balanced, approx. 250 $\Omega$ unbalanced
Max. output level	+16 dBu @ 0 DBFS

### DIGITAL INPUT

Type	TOSLINK, optical connector
Format	ADAT <sup>®</sup> , 8 channels, 24-bit @ 44,1/48 kHz

### DIGITAL OUTPUT

Type	TOSLINK, optical connector
Format	ADAT <sup>®</sup> , 8 channels, 24-bit @ 44,1/48 kHz

### A/D CONVERTER

Type	24-bit, 64-times oversampling, delta-sigma
Dynamic range	Analog input to digital output, approx. 103 dB

### D/A CONVERTER

Type	24-bit, 128-times oversampling, delta-sigma
Dynamic range	Digital input to analog output, approx. 100 dB

### SYNCHRONIZATION

Source	Internal 44.1 kHz, internal 48 kHz, ADAT <sup>®</sup> input, wordclock input
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### WORDCLOCK INPUT

Type	BNC, 1 x sample rate
Input level	2 to 6 V peak-to-peak
Frequency range	44.1 to 48 kHz

### SYSTEM SPECIFICATIONS

Frequency range	10 Hz to 21 kHz @ 48 kHz sample rate
THD	<0,01%
Crosstalk	<-86 dB

### POWER SUPPLY

Mains voltage	USA/Canada 120 V~, 60 Hz Europe/U.K./Australia 230 V~, 50 Hz Japan 100 V~, 50 - 60 Hz General export model 120/230 V~, 50 - 60 Hz
Power consumption	25 W

Fuse	100 - 120 V ~: T 630 mA H 200 - 240 V ~: T 315 mA H
Mains connection	Standard IEC receptacle

### DIMENSIONS

(H x B x T)	ca. 1 3/4" (44.5 mm) x 19" (482.6 mm) x 8 1/2" (217 mm)
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WEIGHT	approx. 2.3 kg
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SHIPPING WEIGHT	approx. 3.3 kg
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BEHRINGER constantly strives to maintain the highest quality standards. Modifications may be made, if necessary, without prior notice. The specifications and appearance of the equipment may therefore differ from those listed or illustrated.

# ULTRAGAIN PRO-8 DIGITAL ADA8000

## 6. WARRANTY

### § 1 WARRANTY CARD/ONLINE REGISTRATION

To be protected by the extended warranty, the buyer must complete and return the enclosed warranty card within 14 days of the date of purchase to BEHRINGER Spezielle Studiotechnik GmbH, in accordance with the conditions stipulated in § 3. Failure to return the card in due time (date as per postmark) will void any extended warranty claims. Based on the conditions herein, the buyer may also choose to use the online registration option via the Internet ([www.behringer.com](http://www.behringer.com) or [www.behringer.de](http://www.behringer.de)).

### § 2 WARRANTY

1. BEHRINGER (BEHRINGER Spezielle Studiotechnik GmbH including all BEHRINGER subsidiaries listed on the enclosed page, except BEHRINGER Japan) 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, in accordance with the warranty regulations described below. If the product shows any defects within the specified warranty period that are not excluded from this warranty as described under § 3 and 4, BEHRINGER shall, at its discretion, either replace or repair the product using suitable new or reconditioned parts. In the case that other parts are used which constitute an improvement, BEHRINGER may, at its discretion, charge the customer for the additional cost of these parts.

2. If the warranty claim proves to be justified, the product will be returned to the user freight prepaid.

3. Warranty claims other than those indicated above are expressly excluded.

### § 3 RETURN AUTHORIZATION NUMBER

1. To obtain warranty service, the buyer (or his authorized dealer) must call BEHRINGER (see enclosed list) during normal business hours **BEFORE** returning the product. All inquiries must be accompanied by a description of the problem. BEHRINGER will then issue a return authorization number.

2. Subsequently, the product must be returned in its original shipping carton, together with the return authorization number to the address indicated by BEHRINGER.

3. Shipments without freight prepaid will not be accepted.

### § 4 WARRANTY REGULATIONS

1. Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice. Any product deemed eligible for repair or replacement by BEHRINGER under the terms of this warranty will be repaired or replaced within 30 days of receipt of the product at BEHRINGER.

2. If the product needs to be modified or adapted in order to comply with applicable technical or safety standards on a national or local level, in any country which is not the country for which the product was originally developed and manufactured, this modification/adaptation shall not be considered a defect in materials or workmanship. The warranty does not cover any such modification/adaptation, irrespective of whether it was carried out properly or not. Under the terms of this warranty, BEHRINGER shall not be held responsible for any cost resulting from such a modification/adaptation.

3. Free inspections and maintenance/repair work are expressly excluded from this warranty, in particular, if caused by improper

handling of the product by the user. This also applies to defects caused by normal wear and tear, in particular, of faders, potentiometers, keys/buttons and similar parts.

4. Damages/defects caused by the following conditions are not covered by this warranty:

▲ improper handling, neglect or failure to operate the unit in compliance with the instructions given in BEHRINGER user or service manuals.

▲ connection or operation of the unit in any way that does not comply with the technical or safety regulations applicable in the country where the product is used.

▲ damages/defects caused by force majeure or any other condition that is beyond the control of BEHRINGER.

5. Any repair or opening of the unit carried out by unauthorized personnel (user included) will void the warranty.

6. If an inspection of the product by BEHRINGER shows that the defect in question is not covered by the warranty, the inspection costs are payable by the customer.

7. Products which do not meet the terms of this warranty will be repaired exclusively at the buyer's expense. BEHRINGER will inform the buyer of any such circumstance. If the buyer fails to submit a written repair order within 6 weeks after notification, BEHRINGER will return the unit C.O.D. with a separate invoice for freight and packing. Such costs will also be invoiced separately when the buyer has sent in a written repair order.

### § 5 WARRANTY TRANSFERABILITY

This warranty is extended exclusively to the original buyer (customer of retail dealer) and is not transferable to anyone who may subsequently purchase this product. No other person (retail dealer, etc.) shall be entitled to give any warranty promise on behalf of BEHRINGER.

### § 6 CLAIM FOR DAMAGES

Failure of BEHRINGER to provide proper warranty service shall not entitle the buyer to claim (consequential) damages. In no event shall the liability of BEHRINGER exceed the invoiced value of the product.

### § 7 OTHER WARRANTY RIGHTS AND NATIONAL LAW

1. This warranty does not exclude or limit the buyer's statutory rights provided by national law, in particular, any such rights against the seller that arise from a legally effective purchase contract.

2. The warranty regulations mentioned herein are applicable unless they constitute an infringement of national warranty law.

\* Customers in the European Union please contact BEHRINGER Germany Support for further details.

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