



KRAMER ELECTRONICS LTD.

USER MANUAL

MODELS:

TR-93

200W Audio Transformer

TR-94

2x200W Audio Transformer

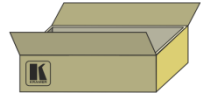


TR-93 / TR-94 Quick Start Guide

This guide helps you install and use your product for the first time. For more detailed information, go to http://www.kramerelectronics.com/support/product_downloads.asp to download the latest manual or scan the QR code on the left.

Step 1: Check what's in the box

- The **TR-93** 200W Audio Transformer / **TR-94** 2x200W Audio Transformer
- 4 Rubber feet
- 1 Quick start guide
- 1 Set of rack ears for **TR-94**

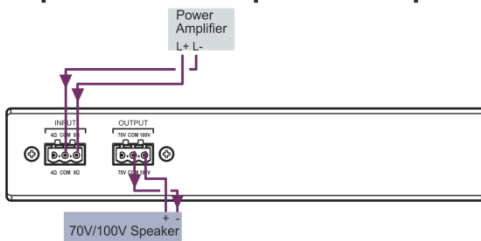


Save the original box and packaging materials in case you need to return your product for service.

Step 2: Install the TR-93 / TR-94

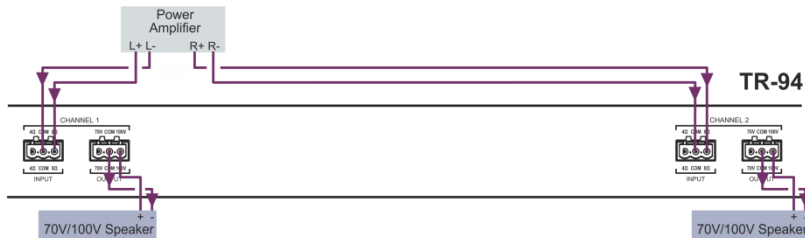
Mount the machine in a rack or place on a table.

Step 3: Connect input and output/s



Make sure to switch off the power on the power amplifier before connecting it to your **TR-93 / TR-94**.

TR-93



TR-94

For best results, we recommend that you always use Kramer high-performance cables.

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1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront video, audio, presentation, and broadcasting professionals on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Video Products.

Congratulations on purchasing your Kramer **TR-93** 200W Audio Transformer / **TR-94** 2x200W Audio Transformer, which is ideal for the following typical applications:

- Array installations
- Conference rooms
- Educational classrooms
- Presentation venues
- Training rooms
- Hotel lobbies

2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual



Go to http://www.kramerelectronics.com/support/product_downloads.asp to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables (we recommend Kramer high-performance, high-resolution cables) to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **TR-93** / **TR-94** away from moisture, excessive sunlight and dust



This equipment is to be used only inside a building. It may only be connected to other equipment that is installed inside a building.



There are no operator serviceable parts inside the unit.

2.2 Recycling Kramer Products

The Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC aims to reduce the amount of WEEE sent for disposal to landfill or incineration by requiring it to be collected and recycled. To comply with the WEEE Directive, Kramer Electronics has made arrangements with the European Advanced Recycling Network (EARN) and will cover any costs of treatment, recycling and recovery of waste Kramer Electronics branded equipment on arrival at the EARN facility. For details of Kramer's recycling arrangements in your particular country go to our recycling pages at <http://www.kramerelectronics.com/support/recycling/>.

3 Overview

The **TR-93** 200W Audio Transformer is a 200W transformer for speaker signals. The unit takes one 4Ω/8Ω channel from the speaker output of a power amplifier, transforms it to 70V/100V and distributes it to an array of loudspeakers.

The **TR-94** 2x200W Audio Transformer is a 2x200W transformer for speaker signals. The unit takes two 4Ω/8Ω channels from a speaker output of a power amplifier, transforms them to 70V/100V and distributes them to an array of loudspeakers.

4 Defining the TR-93 and TR-94

[Figure 1](#) defines the **TR-93** 200W Audio Transformer.

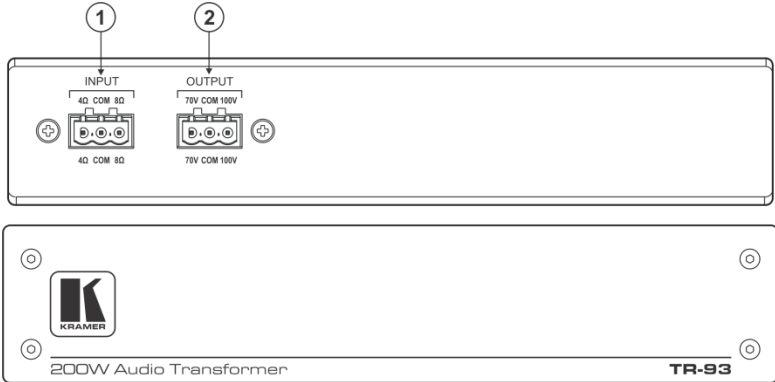


Figure 1: TR-93 200W Audio Transformer

#	Feature	Function
1	INPUT (4Ω or 8Ω and COM) Terminal Block Connectors	Connect to the + (4Ω/8Ω) and - (COM) terminals of an audio amplifier
2	OUTPUT (70V or 100V and COM) Terminal Block Connectors	Connect the 70V or 100V (+) and COM (-) terminals to a 70V/100V speaker

[Figure 2](#) defines the **TR-94** 2x200W Audio Transformer.

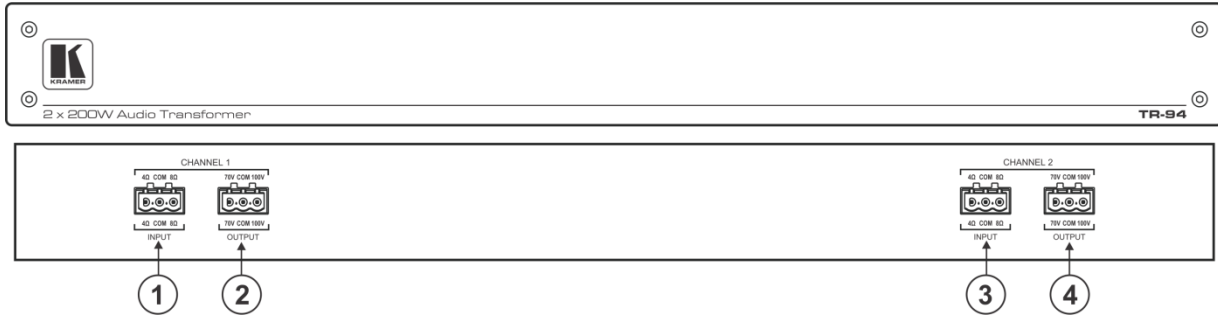


Figure 2: TR-94 2x200W Audio Transformer

#	Feature		Function
1	CHANNEL 1 Terminal Block Connectors	INPUT (4Ω or 8Ω and COM)	Connect to the + (4Ω/8Ω) and - (COM) terminals of an audio amplifier
2		OUTPUT (70V or 100V and COM)	Connect the 70V or 100V (+) and COM (-) terminals to a 70V/100V speaker
3	CHANNEL 2 Terminal Block Connectors	INPUT (4Ω or 8Ω and COM)	Connect to the + (4Ω/8Ω) and - (COM) terminals of an audio amplifier
4		OUTPUT (70V or 100V and COM)	Connect the 70V or 100V (+) and COM (-) terminals to a 70V/100V speaker

5 Installing in a Rack (for the TR-94 only)

This section provides instructions for rack mounting the unit.

Before installing in a rack, be sure that the environment is within the recommended range:

OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)
STORAGE TEMPERATURE:	-10° to +60°C (14° to 140°F)
HUMIDITY:	10% to 90%, RHL non-condensing



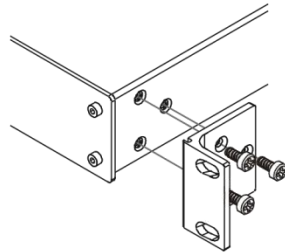
CAUTION!

When installing on a 19" rack, avoid hazards by taking care that:

1. It is located within the recommended environmental conditions, as the operating ambient temperature of a closed or multi unit rack assembly may exceed the room ambient temperature.
2. Once rack mounted, enough air will still flow around the machine.
3. The machine is placed straight in the correct horizontal position.
4. You do not overload the circuit(s). When connecting the machine to the supply circuit, overloading the circuits might have a detrimental effect on overcurrent protection and supply wiring. Refer to the appropriate nameplate ratings for information. For example, for fuse replacement, see the value printed on the product label.
5. The machine is earthed (grounded) in a reliable way and is connected only to an electricity socket with grounding. Pay particular attention to situations where electricity is supplied indirectly (when the power cord is not plugged directly into the socket in the wall), for example, when using an extension cable or a power strip, and that you use only the power cord that is supplied with the machine.

To rack-mount a machine:

1. Attach both ear brackets to the machine. To do so, remove the screws from each side of the machine (3 on each side), and replace those screws through the ear brackets.



2. Place the ears of the machine against the rack rails, and insert the proper screws (not provided) through each of the four holes in the rack ears.

Note:

- In some models, the front panel may feature built-in rack ears
- Detachable rack ears can be removed for desktop use
- Always mount the machine in the rack before you attach any cables or connect the machine to the power
- If you are using a Kramer rack adapter kit (for a machine that is not 19"), see the Rack Adapters user manual for installation instructions available from our Web site

6 Installing the TR-93 and TR-94

This section explains how to install the Audio Transformers, that is:

- Connecting the **TR-93** (see [Section 6.1](#))
- Connecting the **TR-94** (see [Section 6.2](#))



Always switch off the power to each device before connecting it to your **TR-93 / TR-94**. After connecting your **TR-93 / TR-94**, connect its power and then switch on the power to each device.

6.1 Connecting the TR-93

To connect the **TR-93**, as illustrated in the example in [Figure 3](#), do the following:

1. Connect an audio amplifier (for example, the Kramer **914** 2x100W Power Amplifier) to the **TR-93** INPUT 8Ω and COM terminal block connectors by connecting the:
 - SPEAKER OUT L+ terminal block connector on **914** to the INPUT 8Ω terminal block connector on **TR-93**
 - SPEAKER OUT R+ terminal block connector to the INPUT COM terminal block connector on **TR-93**

On the **914**, set the STEREO/BRIDGED MONO switch to BRIDGED MONO.

2. Connect the OUTPUT to a 70V/100V speaker (for example, the Kramer **Yarden 6-C** Closed-back Ceiling Speaker) by connecting the:
 - COM terminal block connector to the - speaker connector
 - 70V or 100V OUTPUT terminal block connector to the + speaker connector
3. Connect the audio amplifier (the Kramer **914** in this example) by connecting:
 - It to an audio source (not shown in [Figure 3](#))
 - The supplied power cord to the **914** power socket and to the mains electricity (not shown in [Figure 3](#))

For further details, you can download the **914** and **Yarden 6-C** user manuals from our [Web site](#)

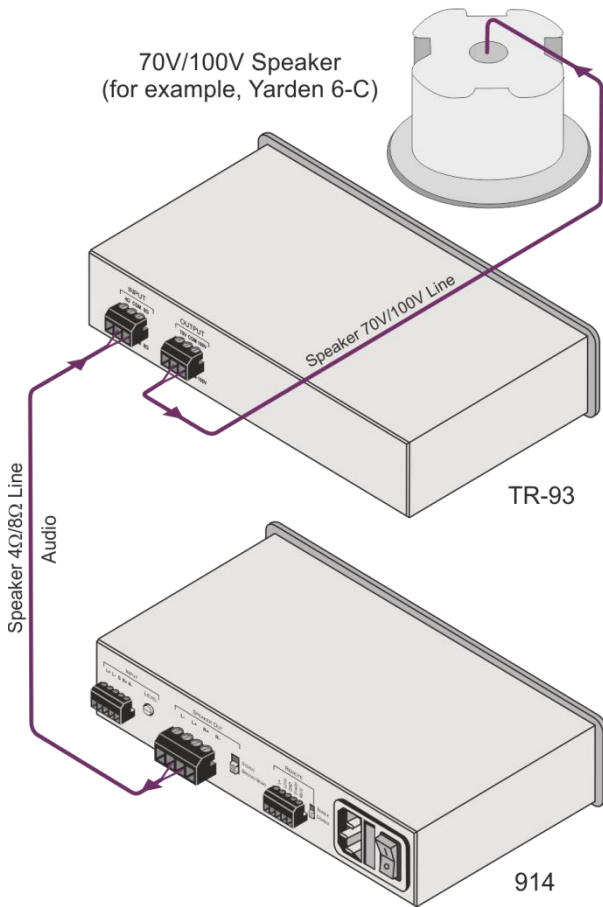


Figure 3: Connecting the TR-93 200W Audio Transformer

6.2 Connecting the TR-94

To connect the **TR-94**, as illustrated in the example in [Figure 4](#), do the following:

1. Connect an audio amplifier (for example, the Kramer **914** Power/Amplifier Mixer) to the **TR-94** input channels by connecting the:
 - Left + and – SPEAKER OUT terminal block connectors on the **914** to the CHANNEL 1 INPUT 8Ω and COM terminal block connectors, respectively, on the **TR-94**
 - Right + and - SPEAKER OUT terminal block connectors on the **914** to the CHANNEL 2 INPUT 8Ω and COM terminal block connectors, respectively, on the **TR-94**

Alternatively, you can reverse the order and connect the left output on the **914** to CHANNEL 2 and the right output on the **914** to CHANNEL 1.

On the **914**, set the STEREO/BRIDGED MONO switch to STEREO

2. Connect the outputs to a 70V/100V speaker (for example, the Kramer **Yarden 6-C** Ceiling Speaker) by connecting CHANNEL 1 to the Left speaker and CHANNEL 2 to the Right speaker. For each channel connect the COM terminal block connector to the ground speaker connector and the 70V or 100V OUTPUT terminal block connector to the + speaker.



Note that you have to select the same power settings (70V or 100V), as required, for both channels.

3. Connect the audio amplifier (the Kramer **914** in this example) by connecting:
 - It to an audio source (not shown in [Figure 3](#))
 - The supplied power cord to the **914** power socket and to the mains electricity (not shown in [Figure 3](#))

For further details, you can download the **914** and **Yarden 6-C** user manuals from our Web site

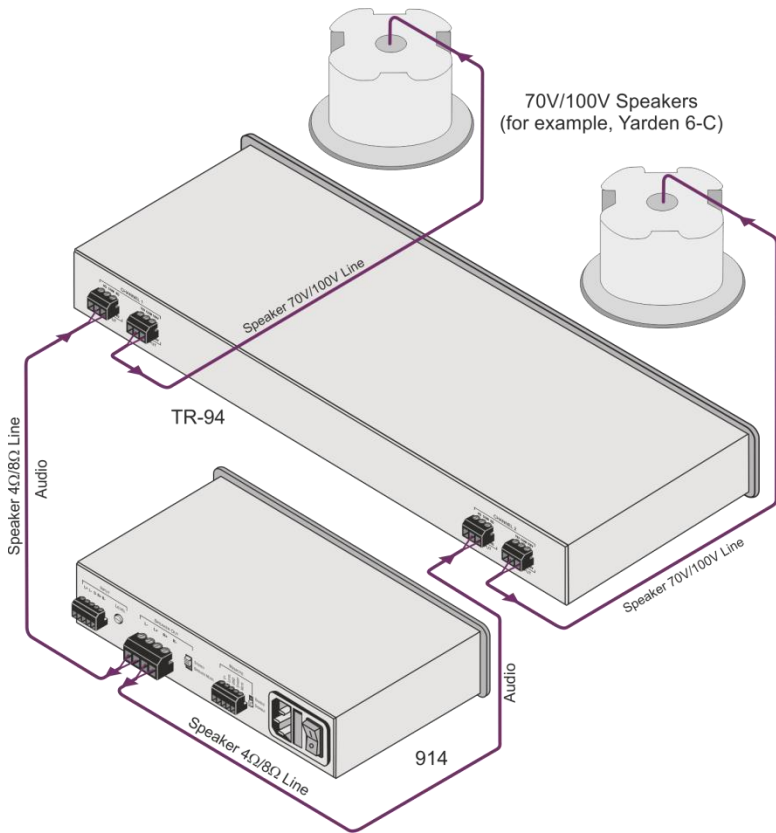


Figure 4: Connecting the TR-94 2x200W Audio Transformer

7 Technical Specifications

	TR-93	TR-94
INPUT:	Single low impedance (4Ω / 8Ω) speaker input on a terminal block connector	Dual low impedance (4Ω / 8Ω) speaker input on a terminal block connector
OUTPUT:	1	2
MAX POWER:	200W	
VOLTAGE GAIN:	7.4dB/10.5dB (70V/100V)	
BANDWIDTH (-3dB):	18kHz	
OPERATING TEMPERATURE:	0° to +40°C (32° to 104°F)	
STORAGE TEMPERATURE:	-10° to +60°C (14° to 140°F) The temperature on the rack adapter	
HUMIDITY:	10% to 90%, RHL non-condensing	
DIMENSIONS	21.4cm x 16.2cm x 4.3cm (8.4" x 6.4" x 1.7") W, D, H	19" x 7" x 1U (W, D, H) rack mountable
WEIGHT:	2.90kg (6.4lbs.)	6.25kg (13.8lbs.)
OPTIONS:	RK-1 19" rack mount adapter	
Specifications are subject to change without notice at http://www.kramerelectronics.com		

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

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IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-300333



Rev: 1