

Kramer Electronics, Ltd.



USER MANUAL

Model:

104LN

1:4 Differential Video Line Amplifier

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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 the video, audio, presentation, and broadcasting professional 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 groups¹ that are clearly defined by function.

Thank you for purchasing your **104LN**, which is ideal for:

- Any system requiring a compact distribution amplifier and line driver
- Rental and staging applications

The package includes the following items:

- **104LN** *1:4 Differential Video Line Amplifier*
- Power adapter (12V DC Input)
- Mounting bracket
- This user manual²

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
- Use Kramer high performance high resolution cables³

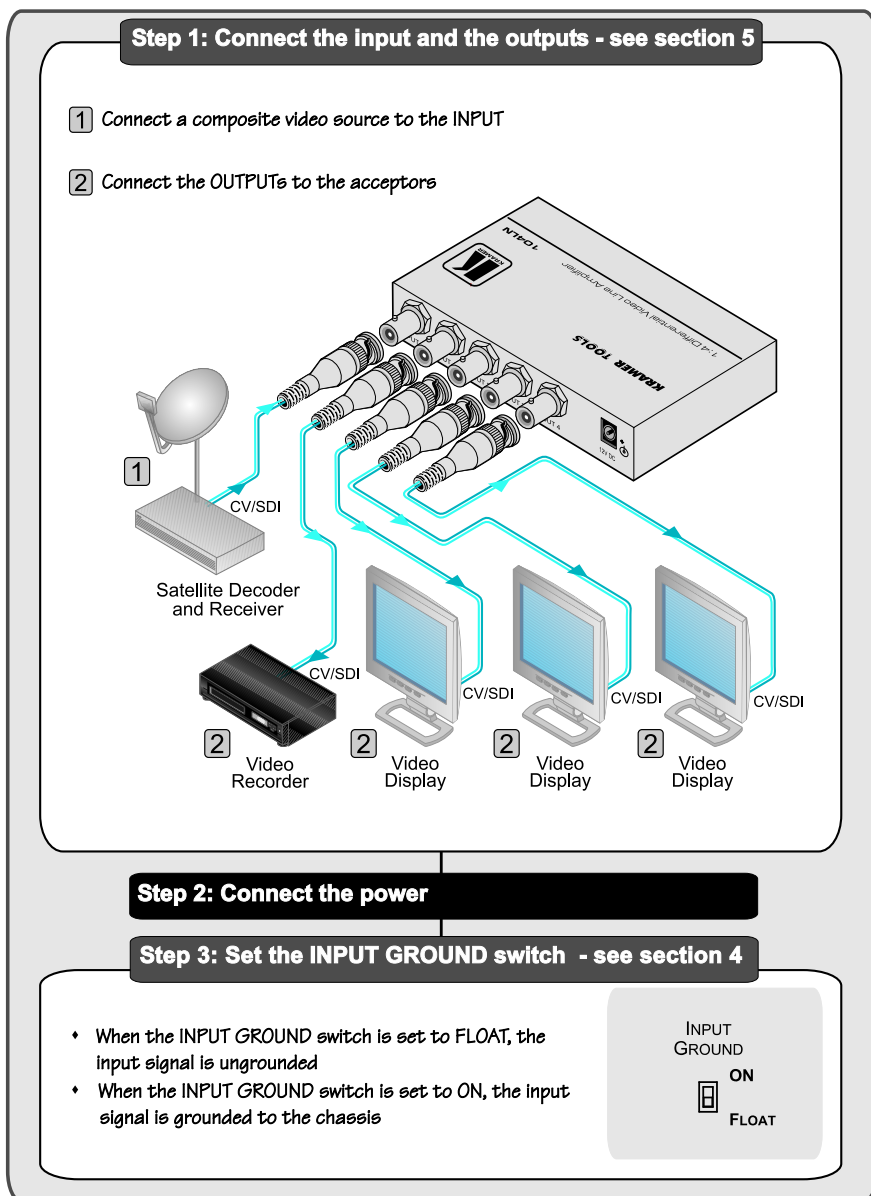
1 GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters; GROUP 11: Sierra Products

2 Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com>

3 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com>

2.1 Quick Start

This quick start chart summarizes the basic setup and operation steps.



3 Overview

The **104LN** is a high-performance distribution amplifier and line driver for composite and SDI video signals.

The **104LN 1:4 Differential Video Line Amplifier** features:

- One composite video input and 4 identical buffered outputs
- Recessed gain and EQ. (equalization) trimmer controls that compensate for signal losses inherent in long cable runs
- A differential input that eliminates common mode noise picked up by the input cable, and supports long cables (letting you locate it anywhere in the distribution chain)
- A bandwidth exceeding 400MHz, ensuring transparency in the most critical applications
- Full DC coupling, ensuring signal linearity and flatness

To achieve the best performance:

- Connect only good quality connection cables, thus avoiding interference, deterioration in signal quality due to poor matching, and elevated noise- levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances and position your Kramer **104LN** away from moisture, excessive sunlight and dust



Caution – No operator-serviceable parts inside unit.

Warning – Use only the Kramer Electronics input power wall adapter that is provided with this unit¹.

Warning – Disconnect power and unplug unit from wall before installing or removing device or servicing unit.

¹ For example, part number 22535-000251

4 Your 104LN 1:4 Differential Video Line Amplifier

Figure 1, Figure 2 and Table 1 define the **104LN**:

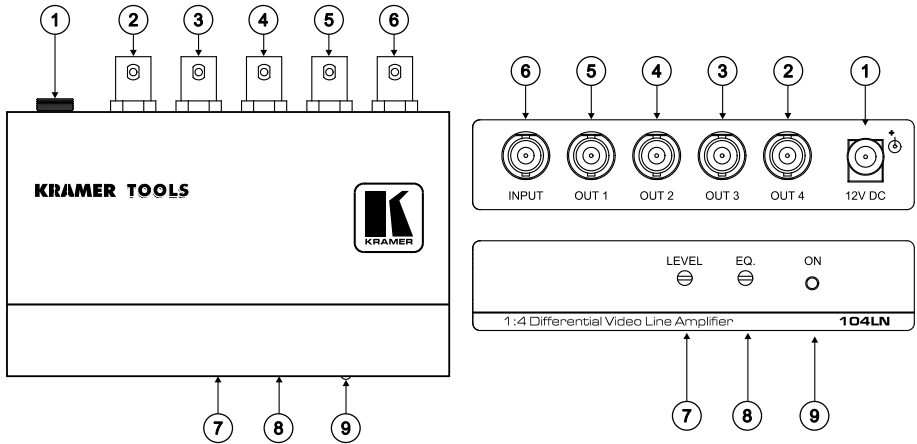


Figure 1: 104LN 1:4 Differential Video Line Amplifier

Table 1: 104LN Component / UXGA HDMI Scaler Features

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit
2	OUT 4 BNC Connector	Connects to composite video acceptor 4
3	OUT 3 BNC Connector	Connects to composite video acceptor 3
4	OUT 2 BNC Connector	Connects to composite video acceptor 2
5	OUT 1 BNC Connector	Connects to composite video acceptor 1
6	INPUT BNC Connector	Connects to the composite video source
7	LEVEL Trimmer	Adjusts ¹ the output signal level for outputs 1, 2, 3 and 4
8	EQ. Trimmer	Adjusts ¹ the cable compensation equalization level
9	ON LED	Illuminates when receiving power

Figure 2 illustrates the INPUT GROUND switch:

¹ Insert a screwdriver into the hole and carefully rotate it, to trim the level

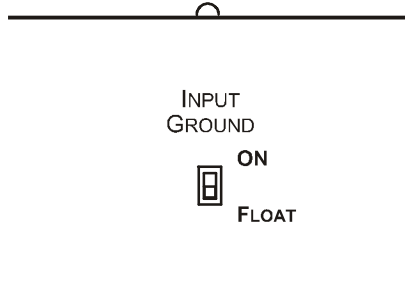


Figure 2: 104LN 1:4 Differential Video Line Amplifier (Underside)

By default, the INPUT GROUND switch is set to FLOAT¹. If the image appears noisy, set the switch to ON².

5 Connecting the 104LN

To connect the **104LN 1:4 Differential Video Line Amplifier**, as the example in Figure 3 illustrates, connect the following³:

1. Connect a composite video source (for example, a satellite decoder and receiver) to the INPUT BNC connector.
2. Connect the four OUT BNC connectors to up to four composite video acceptors, as follows:
 - Connect the OUT 1 connector to video acceptor 1 (for example, a video recorder)
 - Connect the OUT 2 connector to video acceptor 2 (for example, a video display)
 - Connect the OUT 3 connector to video acceptor 3 (for example, a video display)
 - Connect the OUT 4 connector to video acceptor 4 (for example, a video display)
3. Adjust the output signal level and/or cable compensation equalization level, if required.
4. If the image appears noisy, set the INPUT GROUND to either ON or FLOAT to lower the noise level.

¹ The input signal is isolated from the chassis

² The input signal is grounded to the chassis

³ Switch OFF the power on each device before connecting it to your 104LN. After connecting your 104LN, switch on its power and then switch on the power on each device

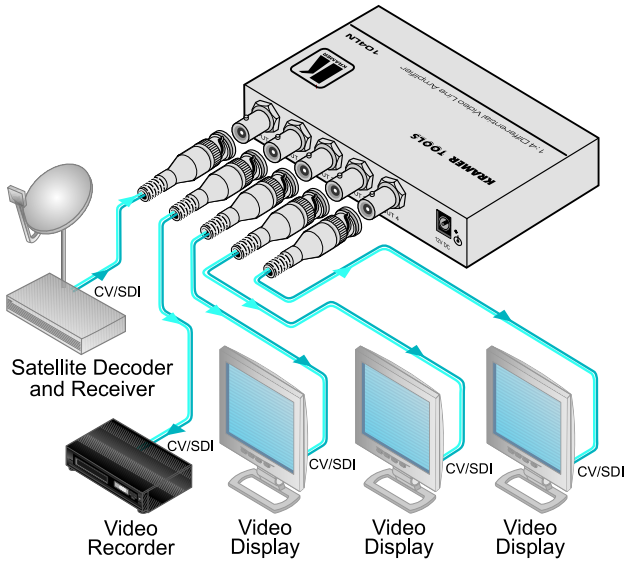


Figure 3: Connecting a 104LN 1:4 Differential Video Line Amplifier

6 Technical Specifications

Table 2: Technical Specifications¹ of the 104LN

INPUT:	1 video (CV IN), differential, 1Vpp/75Ω, on a BNC connector
OUTPUTS:	4 video, 1Vpp/75Ω on BNC connectors
MAX. OUTPUT LEVEL:	1.6Vpp
BANDWIDTH (-3dB):	>400MHz
DIFF. GAIN:	0.22%
DIFF. PHASE:	0.1Deg
K-FACTOR:	<0.05%
S/N RATIO:	73.3dB
CONTROLS:	Level: -1.3 to 6dB; EQ. 0 to 10.2dB
COUPLING:	DC
POWER SOURCE:	12 VDC, 95mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98"), W, D, H.
WEIGHT:	0.3kg. (0.66lbs.) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter.

¹ Specifications are subject to change without notice

LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site www.kramerelectronics.com.
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
 - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
 - ii) Product modification, or failure to follow instructions supplied with the product
 - iii) Repair or attempted repair by anyone not authorized by Kramer
 - iv) Any shipment of the product (claims must be presented to the carrier)
 - v) Removal or installation of the product
 - vi) Any other cause, which does not relate to a product defect
 - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

NOTE: All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

EN-50081:	"Electromagnetic compatibility (EMC); generic emission standard. Part 1: Residential, commercial and light industry"
EN-50082:	"Electromagnetic compatibility (EMC) generic immunity standard. Part 1: Residential, commercial and light industry environment".
CFR-47:	FCC* Rules and Regulations: Part 15: "Radio frequency devices Subpart B Unintentional radiators"

CAUTION!

⊗ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.

⊗ Use the supplied DC power supply to feed power to the machine.

⊗ Please use recommended interconnection cables to connect the machine to other components.

* FCC and CE approved using STP cable (for twisted pair products)



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com, where updates to this user manual may be found. We welcome your questions, comments and feedback.



Caution

Safety Warning:

Disconnect the unit from the power supply before opening/servicing.



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Rev: 4

Kramer Electronics, Ltd.

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