

# Kramer Electronics, Ltd.



## USER MANUAL

### **Models:**

**103AV**, *1:3 Audio-Stereo / Video DA*

**104M**, *1:4 Microphone Amplifier*

**105A**, *1:5 Stereo Audio DA*

**105S**, *1:5 High Resolution s-Video DA*

**105V**, *1:5 High Resolution Video DA*

**105VB**, *1:5 High Resolution Video DA*

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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 groups<sup>1</sup> that are clearly defined by function.

Congratulations on purchasing one or more of the following Kramer TOOLS: **103AV**, *1:3 Audio-Stereo / Video DA*, **104M**, *1:4 Microphone Amplifier*, **105A**, *1:5 Stereo Audio DA*, **105S**, *1:5 High Resolution s-Video DA*, **105V**, *1:5 High Resolution Video DA* and **105VB**, *1:5 High Resolution Video DA*

They are ideal for:

- Duplication and other studio applications requiring multiple outputs of identical quality
- Professional presentation and display systems, CCTV and home theater applications and field production applications

The package includes the following items:

- **103AV**, and/or **104M**, and/or **105A**, and/or **105S**, and/or **105V**, and/or **105VB**
- Power adapter (12V DC Input)
- This user manual<sup>2</sup>

## 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 cables<sup>3</sup>

### 2.1 Quick Start

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

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<sup>1</sup> 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

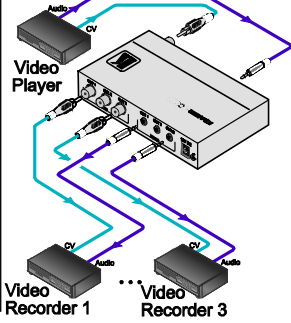
<sup>2</sup> Download up-to-date Kramer user manuals from the Internet at this URL: <http://www.kramerelectronics.com>

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

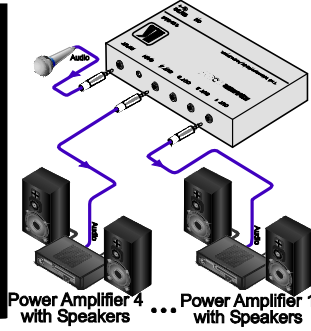
**Step 1: Connect your Kramer TOOL**

- 1 Connect the source to the Input
- 2 Connect the outputs to the acceptors
- 3 Connect the power
- 4 If required, adjust the audio and/or video level trimmers, by inserting a screwdriver into the appropriate small hole and rotating it.

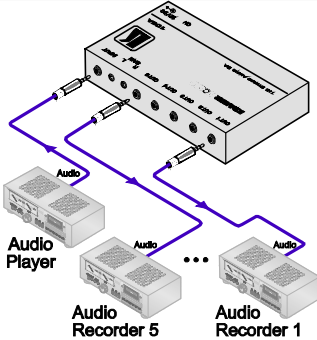
**103AV**



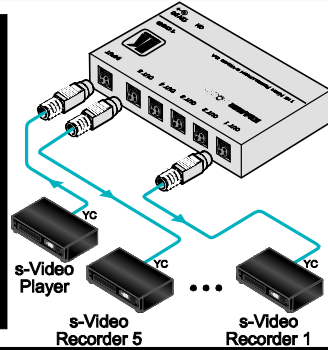
**104M**



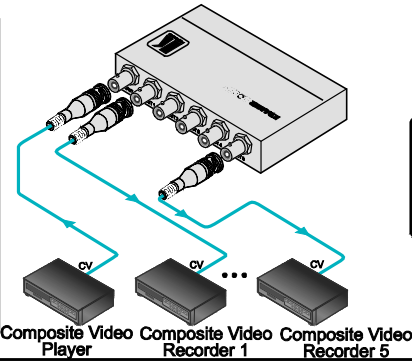
**105A**



**105S**



**105V/105VB**



The 105VB has BNC connectors and the 105V has RCA connectors

### 3 Overview

The following sections describe the:

- **103AV**, *1:3 Audio-Stereo / Video DA*, which accepts one audio input and one video input, provides correct buffering and isolation, and distributes these signals to three identical audio and video outputs (see section 4)
- **104M**, *1:4 Microphone Amplifier*, which accepts a single Mic input that is amplified and distributes it to four identical outputs (see section 5)
- **105A**, *1:5 Stereo Audio DA*, which accepts one stereo audio input and distributes it to five identical outputs (see section 6)
- **105S**, *1:5 High Resolution s-Video DA*, which accepts one s-Video signal and distributes it to five identical outputs (see section 7)
- **105V**, *1:5 High Resolution Video DA*, which accepts one video input and distributes it to five identical outputs (see section 8)
- **105VB**, *1:5 High Resolution Video DA*, which accepts one video input and distributes it to five identical outputs (see section 9)

#### 3.1 Recommendations for Achieving the Best Performance

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 machines 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 unit<sup>1</sup>.

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

<sup>1</sup> For example: model number AD2512C, part number 2535-000251

## 4 Your 103AV, 1:3 Audio-Stereo / Video Distributor

The **103AV** is a compact distribution amplifier for composite video and unbalanced stereo audio signals. It will take one input, provide correct buffering and isolation, and distribute the signal to three identical outputs. The **103AV**:

- Has a high video bandwidth of 320MHz to ensure transparent operation even in the most critical applications
- Uses RCA connectors for composite video, and 3.5mm mini connectors for the unbalanced stereo audio
- Includes audio and video level (gain) controls
- Is 12V DC fed

Figure 1 and Table 1 define the **103AV 1:3 Audio-Stereo / Video DA**:

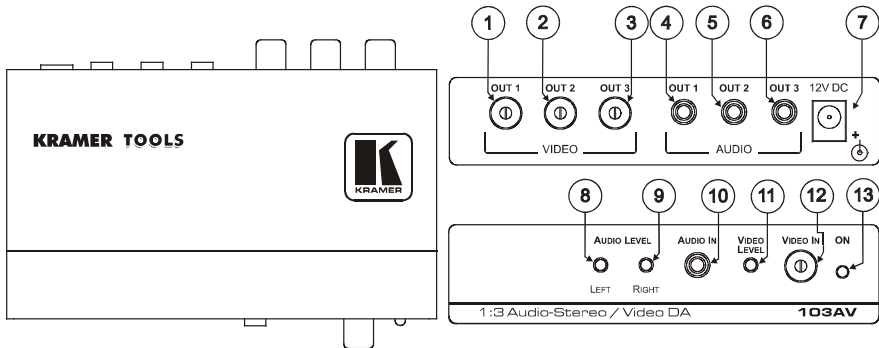


Figure 1: 103AV Audio-Stereo / Video DA

Table 1: Features and Functions of the 103AV Audio-Stereo / Video DA

#	Feature		Function
1	VIDEO	OUT 1 RCA Connector	Connects to the video acceptor 1
2		OUT 2 RCA Connector	Connects to the video acceptor 2
3		OUT 3 RCA Connector	Connects to the video acceptor 3
4	AUDIO	OUT 1 3.5mm Mini Connector	Connects to the unbalanced stereo audio acceptor 1
5		OUT 2 3.5mm Mini Connector	Connects to the unbalanced stereo audio acceptor 2
6		OUT 3 3.5mm Mini Connector	Connects to the unbalanced stereo audio acceptor 3
7	12V DC		+12V DC connector for powering the unit
8	AUDIO LEVEL	LEFT Trimmer <sup>1</sup>	Adjusts the left channel audio gain
9		RIGHT Trimmer <sup>1</sup>	Adjusts the right channel audio gain
10	AUDIO IN	Mini Connector	Connects to the unbalanced stereo audio source
11	VIDEO LEVEL	Trimmer	Adjusts the gain of the video outputs
12	VIDEO IN	RCA Connector	Connects to the video source
13	ON	LED	Illuminates when the machine is powered

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

#### 4.1 Connecting the 103AV 1:3 Audio-Stereo / Video DA

To connect the **103AV 1:3 Audio-Stereo / Video DA**, as the example in Figure 2 illustrates, do the following:

1. Connect a video and audio source (for example, a video player) to the VIDEO IN RCA and AUDIO IN mini connectors, respectively.
2. Connect the VIDEO OUT RCA connectors and the AUDIO OUT mini connectors to up to 3 video and audio acceptors<sup>1</sup>, respectively (for example, video recorders).
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the level trimmers<sup>2</sup>.

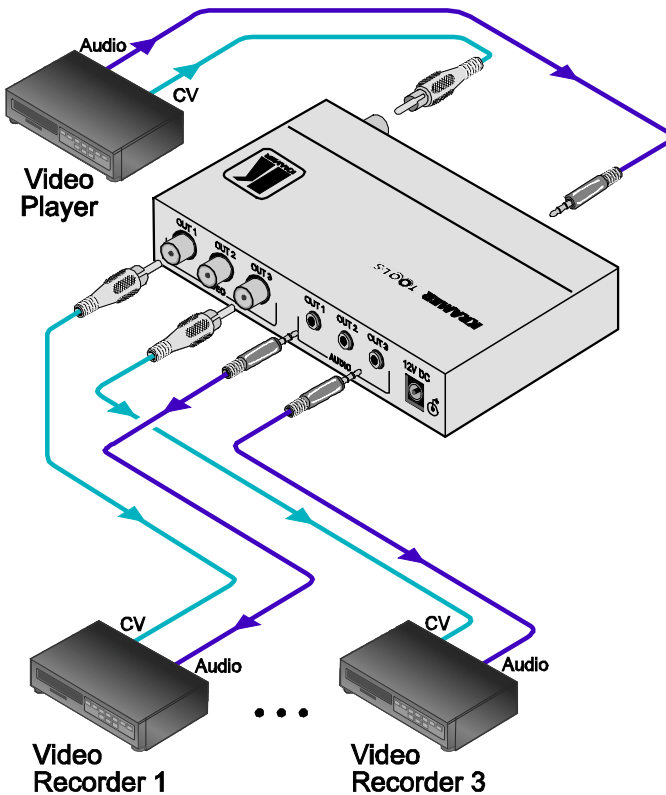


Figure 2: Connecting the 103AV 1:3 Audio-Stereo / Video DA

<sup>1</sup> You do not have to connect all the outputs

<sup>2</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level



## 4.2 Technical Specifications

Table 2 includes the technical specifications<sup>1</sup>:

*Table 2: Technical Specifications of the 103AV 1:3 Audio-Stereo / Video DA*

INPUT:	1 composite video, 1Vpp/75 Ω on an RCA connector 1 audio stereo, 1Vpp/33kΩ on 3.5mm mini connector
OUTPUT:	3 composite video, 1Vpp/75 Ω on RCA connectors 3 audio stereo, 1Vpp/150Ω on 3.5mm mini connectors
MAX. VIDEO OUTPUT:	2Vpp
VIDEO BANDWIDTH (-3dB):	320MHz
AUDIO BANDWIDTH (-3dB):	20kHz
DIFF. GAIN:	0.1%
DIFF. PHASE:	0.16Deg.
K-FACTOR:	<0.05%
VIDEO S/N RATIO:	72dB
AUDIO S/N RATIO:	85dB unweighted
CROSSTALK:	-70dB @20kHz
VIDEO COUPLING:	AC
AUDIO THD+NOISE:	0.02%
POWER SOURCE:	12V DC, 50mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.28kg (0.62lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

<sup>1</sup> Specifications are subject to change without notice

## 5 Your 104M, 1:4 Microphone Amplifier

The **104M** is a high quality distribution amplifier for dynamic microphone signals. It accepts a microphone input and distributes the signal to four identical line-level outputs.

The **104M**:

- Includes audio level (Gain) control
- Has an S/N ratio of 78dB
- Is 12V DC fed

Figure 3 and Table 3 define the **104M 1:4 Microphone Amplifier**

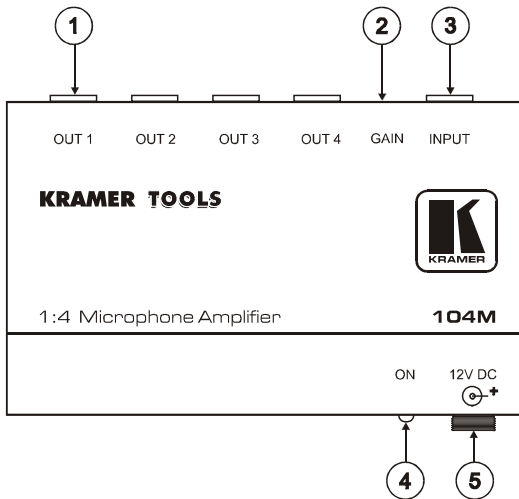


Figure 3: 104M Microphone Amplifier

Table 3: Features and Functions of the 104M Microphone Amplifier

#	Feature	Function
1	OUT 6.5mm Phone Connector	Connects to the audio acceptors (from 1 to 4)
2	GAIN Trimmer <sup>1</sup>	Controls the audio output level
3	INPUT 6.5mm Phone Connector	Connects to the mono microphone audio source
4	ON LED	Illuminates when the machine is powered
5	12V DC	+12V DC connector for powering the unit

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

## 5.1 Connecting the 104M 1:4 Microphone Amplifier

To connect the **104M Microphone Amplifier**, as the example in Figure 4 illustrates, do the following:

1. Connect an audio source (for example, a microphone) to the INPUT 6.5 phone connector.
2. Connect the OUT 6.5 phone connectors to up to 4 audio acceptors (for example, power amplifiers with speakers)<sup>1</sup>.
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the level trimmer<sup>2</sup>.

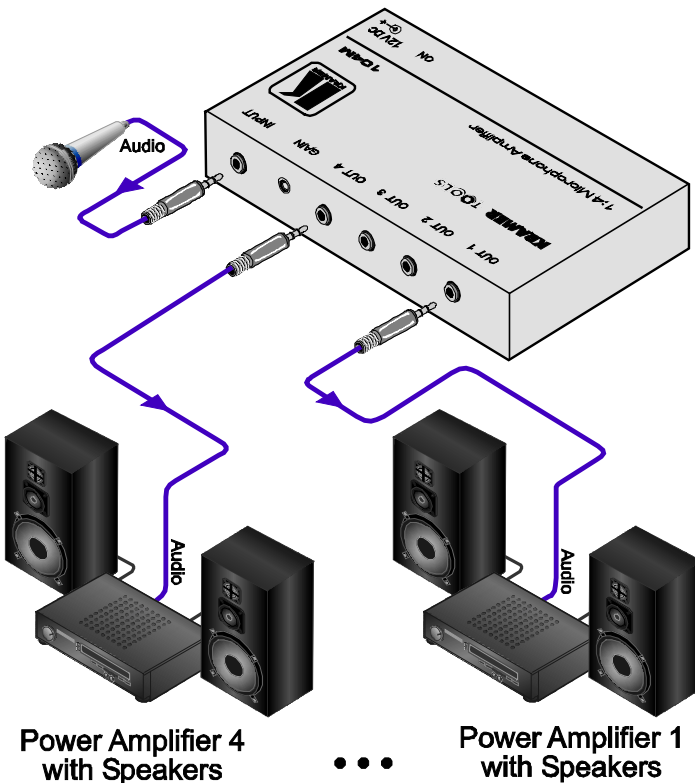


Figure 4: Connecting the 104M 1:4 Microphone Amplifier

<sup>1</sup> You do not have to connect all the outputs

<sup>2</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

## 5.2 Technical Specifications

Table 4 includes the technical specifications<sup>1</sup>:

*Table 4: Technical Specifications of the 104M 1:4 Microphone Amplifier*

INPUT:	One mono microphone 5mVpp/10k $\Omega$ on 6.5mm phone connector
OUTPUTS:	4 mono line level 1Vpp/150 $\Omega$ on 6.5mm phone connectors
MAX. OUTPUT LEVEL:	4.8Vpp
AUDIO BANDWIDTH (-3dB):	37kHz
GAIN CONTROL:	5dB to 54dB
S/N RATIO:	78dB
THD @1kHz:	0.1%
POWER SOURCE:	12V DC, 20mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.28kg (0.62lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" Rack adapter

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<sup>1</sup> Specifications are subject to change without notice

## 6 Your 105A, 1:5 Stereo Audio DA

The **105A** is a high performance distribution amplifier for unbalanced stereo audio signals using 3.5mm mini connectors. It accepts one stereo input and distributes the signal to five identical stereo outputs.

The **105A**:

- Includes audio left and right level (Gain) controls
- Has an S/N ratio of 80dB (unweighted)
- Is 12V DC fed

Figure 5 and Table 5 define the **105A 1:5 Stereo Audio DA**

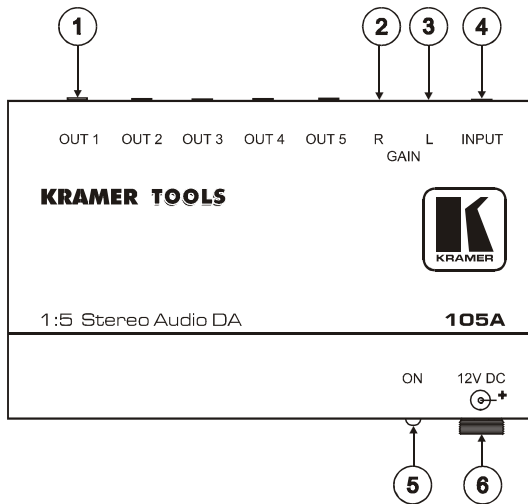


Figure 5: 105A 1:5 Stereo Audio DA

Table 5: Features and Functions of the 105A 1:5 Stereo Audio DA

#	Feature	Function
1	OUT Mini Connector	Connects to the audio acceptors (from 1 to 5)
2	GAIN	R Trimmer <sup>1</sup>
3		L Trimmer <sup>1</sup>
4	INPUT Mini Connector	Connects to the stereo/balanced mono audio source
5	ON LED	Illuminates when the machine is powered
6	12V DC	+12V DC connector for powering the unit

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

## 6.1 Connecting the 105A 1:5 Stereo Audio DA

To connect the **105A 1:5 Stereo Audio DA**, as the example in Figure 6 illustrates, do the following:

1. Connect a stereo/balanced mono audio source (for example, an audio player) to the INPUT mini connector.
2. Connect the OUT mini connectors to up to 5 audio acceptors (for example, audio recorders)<sup>1</sup>.
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the left and right level trimmers<sup>2</sup>.

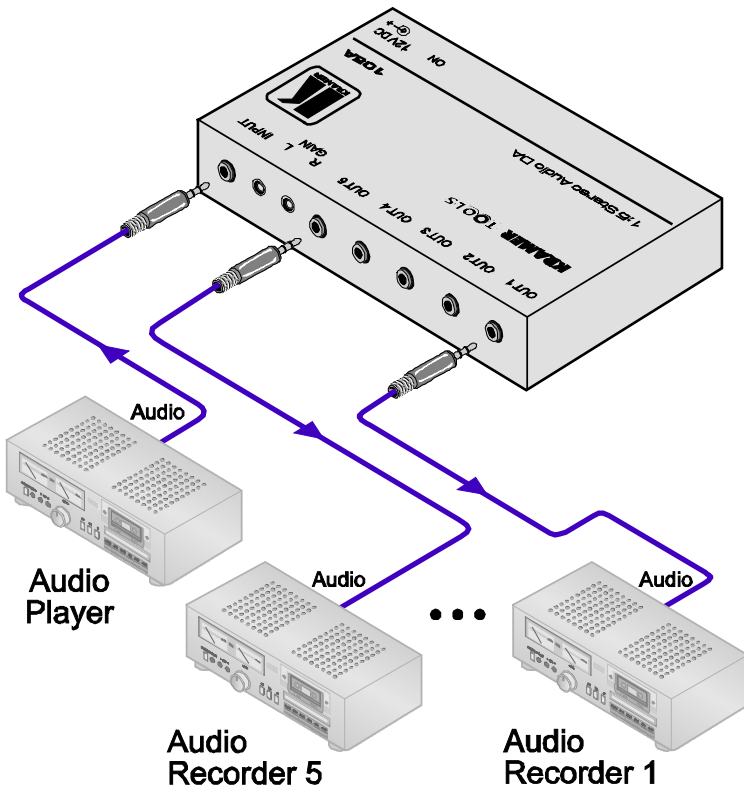


Figure 6: Connecting the 105A 1:5 Stereo Audio DA

<sup>1</sup> You do not have to connect all the outputs

<sup>2</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

## 6.2 Technical Specifications

Table 6 includes the technical specifications<sup>1</sup>:

*Table 6: Technical Specifications of the 105A 1:5 Stereo Audio DA*

INPUT:	1 audio stereo/balanced mono, 1Vpp/33k $\phi$ n a 3.5mm mini connector
OUTPUTS:	5 audio stereo/balanced mono 1Vpp/50 $\phi$ n 3.5mm mini connectors
MAX. OUTPUT:	5Vpp (> +4dBu)
AUDIO BANDWIDTH (-3dB):	20kHz
S/N RATIO:	80dB unweighted
CONTROL:	Left and right gain rear trimmers (0/+3.5dB range)
COUPLING:	AC
THD:	0.03% (2nd harmonic)
POWER SOURCE:	12V DC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.28kg (0.62lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapters

<sup>1</sup> Specifications are subject to change without notice

## 7 Your 105S, 1:5 High Resolution s-Video DA

The **105S** is a high performance s-Video (Y/C) distribution amplifier. It accepts one input, provides correct buffering and isolation, and distributes the signal to five identical outputs using 4-pin s-Video connectors.

The **105S**:

- Includes chroma (C) and luma (Y) gain controls
- Has a bandwidth (Y) of 230MHz to ensure transparent operation even in the most critical applications
- Is 12V DC fed

Figure 7 and Table 7 define the **105S 1:5 High Resolution s-Video DA**:

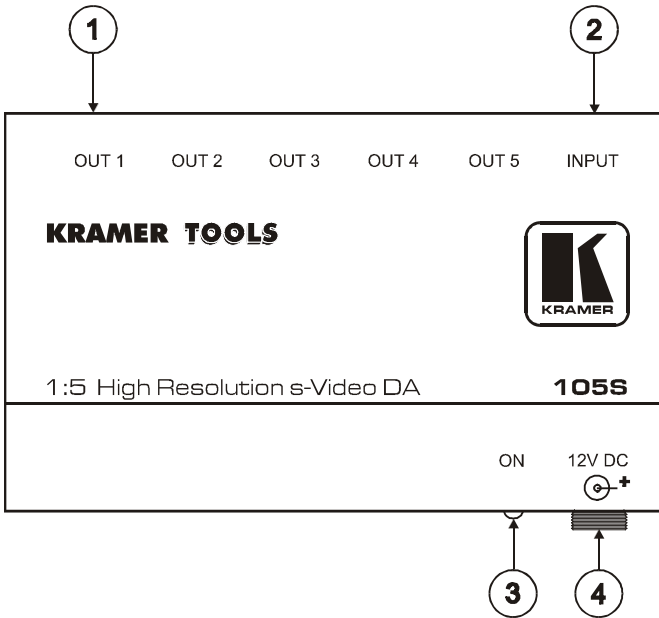


Figure 7: 105S 1:5 High Resolution s-Video DA

Table 7: Features and Functions of the 105S 1:5 High Resolution s-Video DA

#	Feature	Function
1	OUT 4-pin Connectors	Connects to the s-Video acceptors (from 1 to 5)
2	INPUT 4-pin Connector	Connects to the s-Video source
3	ON LED	Illuminates when the machine is powered
4	12V DC	+12V DC connector for powering the unit



Figure 8 and Table 8 define the underside of the **105S 1:5 High Resolution s-Video DA**:

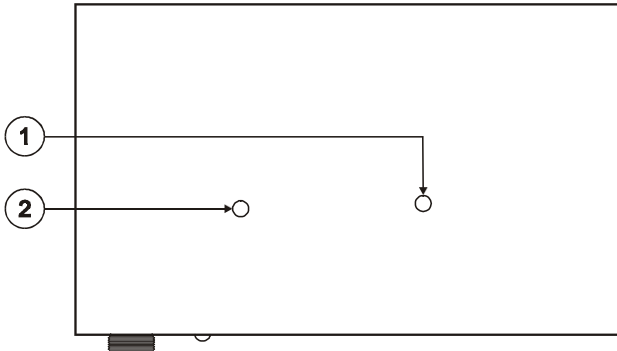


Figure 8: 105S 1:5 High Resolution s-Video DA Underside

Table 8: Features and Functions of the 105S 1:5 High Resolution s-Video DA Underside

#	Feature	Function
1	CHROMA (C) Trimmer <sup>1</sup>	Adjust the chroma level of the output
2	LUMA (Y) Trimmer <sup>1</sup>	Adjust the luma level of the output

## 7.1 Connecting the 105S 1:5 High Resolution s-Video DA

To connect your **105S 1:5 High Resolution DA**, as illustrated in Figure 9, do the following:

1. Connect an s-Video source (for example, an s-Video player) to the INPUT 4-pin connector.
2. Connect the OUT 4-pin connectors to up to 5 s-Video acceptors (for example, s-Video recorders)<sup>2</sup>.
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the underside chroma and luma level trimmers<sup>3</sup>.

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

<sup>2</sup> You do not have to connect all the outputs

<sup>3</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

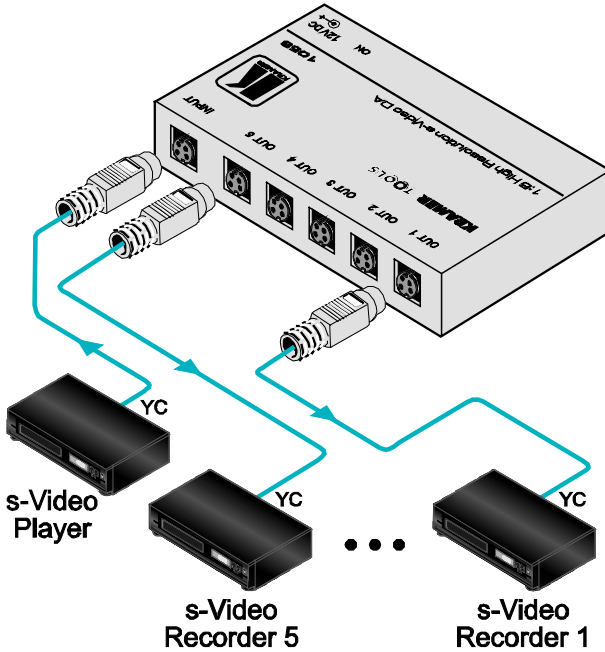


Figure 9: Connecting the 105S 1:5 High Resolution s-Video DA

## 7.2 Technical Specifications

Table 9 includes the technical specifications<sup>1</sup>:

Table 9: Technical Specifications of the 105S 1:5 High Resolution s-Video DA

INPUT:	1 s-Video: 1Vpp/75 Ω (Y), 0.3Vpp/75Ω (C), on a 4pin connector
OUTPUTS:	5 s-Video: 1Vpp/75 Ω (Y), 0.3Vpp/75Ω (C), on 4-pin connectors
MAX. VIDEO OUTPUT:	2Vpp (Y)
VIDEO BANDWIDTH (-3dB):	230MHz (Y)
DIFF. GAIN:	0.08%
DIFF. PHASE:	0.12Deg
K-FACTOR:	<0.05%
S/N RATIO:	72dB
CONTROL:	Luma (Y) Level: -4.5dB to +1.8dB, Chroma (C) Level: -3.5dB to +18dB
COUPLING:	AC
POWER SOURCE:	12V DC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.28kg (0.62lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

<sup>1</sup> Specifications are subject to change without notice

## 8 The 105V, 1:5 High Resolution Video DA

The **105V** is a high performance distribution amplifier for composite video signals. It accepts one input, provides correct buffering and isolation and distributes the signal to five identical outputs.

In particular, the **105V**:

- Has a bandwidth of 400MHz to ensure transparent operation even in the most critical applications
- Has RCA connectors
- Has video level (Gain) control
- Is 12V DC fed

Figure 10 and Table 10 define the **105V 1:5 High Resolution Video DA**

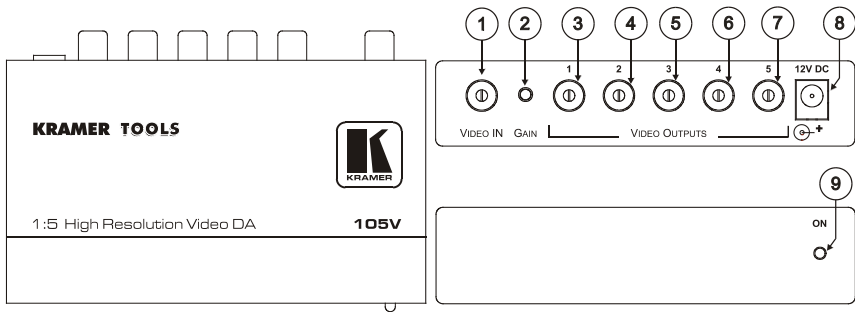


Figure 10: 105V 1:5 High Resolution Video DA

Table 10: Features and Functions of the 105V 1:5 High Resolution Video DA

#	Feature	Function	
1	VIDEO IN RCA Connector	Connect to the composite video source	
2	GAIN Trimmer <sup>1</sup>	Control the gain of the video outputs	
3	VIDEO OUTPUT RCA Connectors	OUT 1	Connect to composite video acceptor 1
4		OUT 2	Connect to composite video acceptor 2
5		OUT 3	Connect to composite video acceptor 3
6		OUT 4	Connect to composite video acceptor 4
7		OUT 5	Connect to composite video acceptor 5
8	12V DC	+12V DC connector for powering the unit	
9	ON LED	Illuminates when the machine is powered	

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

## 8.1 Connecting the 105V 1:5 High Resolution Video DA

To connect your **105V 1:5 High Resolution Video DA**, as illustrated in Figure 11, do the following:

1. Connect a composite video source (for example, a composite video player) to the VIDEO IN RCA connector.
2. Connect the VIDEO OUTPUT RCA connectors to up to 5 composite video acceptors (for example, composite video recorders)<sup>1</sup>.
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the GAIN level trimmer<sup>2</sup>.

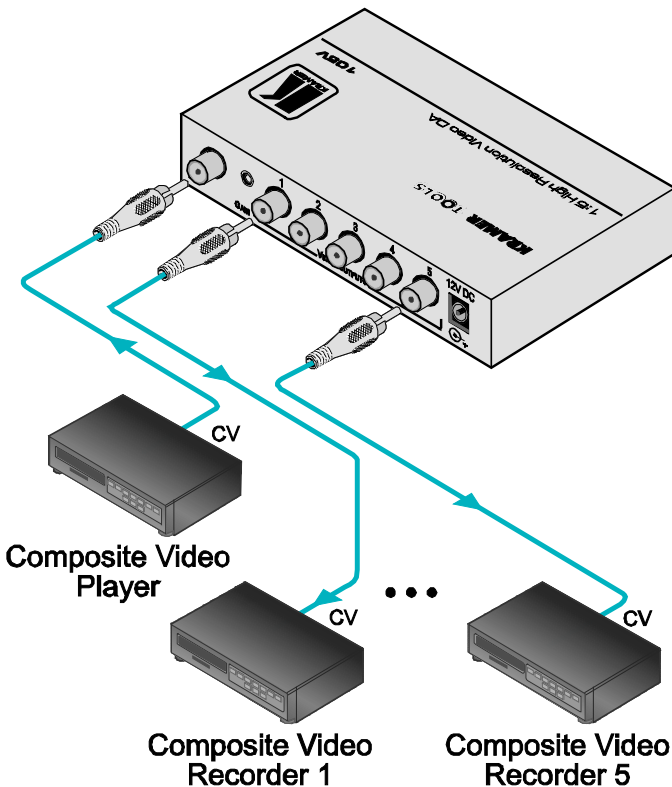


Figure 11: Connecting the 105V 1:5 High Resolution Video DA

<sup>1</sup> You do not have to connect all the outputs

<sup>2</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

## 8.2 Technical Specifications

Table 11 includes the technical specifications<sup>1</sup>:

*Table 11: Technical Specifications of the 105V 1:5 High Resolution Video DA*

INPUT:	1 video, 1Vpp/75 Ω on an RCA connector
OUTPUTS:	5 video, 1Vpp/75 Ω on RCA connectors
MAX. VIDEO OUTPUT:	2Vpp
VIDEO BANDWIDTH (-3dB):	400MHz
DIFF. GAIN:	0.1%
DIFF. PHASE:	0.15Deg.
K-FACTOR:	<0.05%
S/N RATIO:	75dB
CONTROL:	Up to +6dB
COUPLING:	AC
POWER SOURCE:	12V DC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.28kg (0.62lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

<sup>1</sup> Specifications are subject to change without notice

## 9 The 105VB, 1:5 High Resolution Video DA

The **105VB** is a high performance distribution amplifier for composite video signals. It accepts one input, provides correct buffering and isolation and distributes the signal to five identical outputs.

In particular, the **105VB**:

- Has a bandwidth of 400MHz to ensure transparent operation even in the most critical applications
- Has BNC connectors
- Includes video level (Gain) control
- Is 12V DC fed

Figure 12 and Table 12 define the **105VB 1:5 High Resolution Video DA**

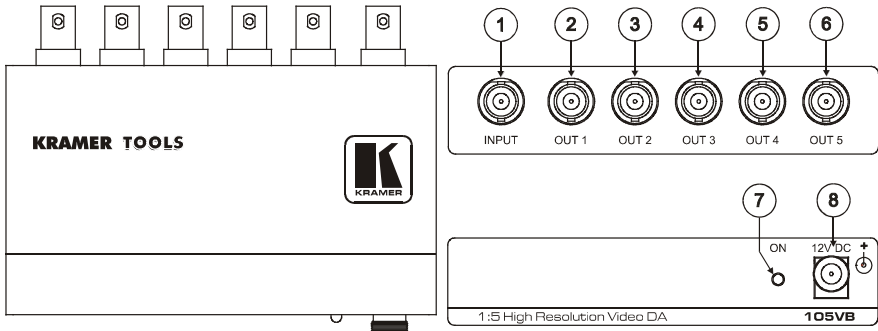


Figure 12: 105VB 1:5 High Resolution Video DA

Table 12: Features and Functions of the 105VB 1:5 High Resolution Video DA

#	Feature	Function
1	INPUT BNC Connector	Connects to the composite video source
2	OUT BNC Connectors	Connect to the composite video acceptors (from 1 to 5)
3	ON LED	Illuminates when the machine is powered
4	12V DC	+12V DC connector for powering the unit

Figure 13 and Table 13 define the **105VB** rear panel:

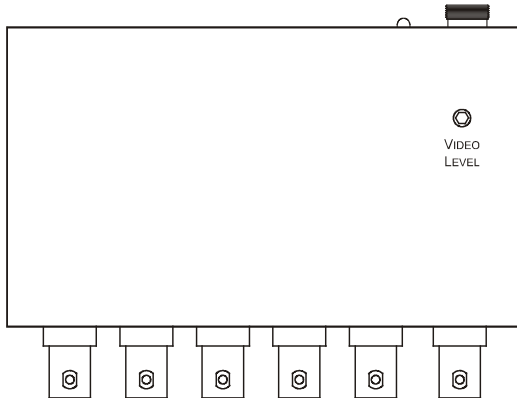


Figure 13: 105VB 1:5 High Resolution Video DA Rear Panel

Table 13: Features and Functions of the 105VB Rear Panel

Feature	Function
VIDEO LEVEL Trimmer <sup>1</sup>	Controls the gain of the video outputs

## 9.1 Connecting the 105VB 1:5 High Resolution Video DA

To connect your **105VB 1:5 High Resolution Video DA**, as illustrated in Figure 14, do the following:

1. Connect a composite video source (for example, a composite video player) to the INPUT BNC connector.
2. Connect the OUT BNC connectors to up to 5 composite video acceptors (for example, composite video recorders)<sup>2</sup>.
3. Connect the power adapter to the power socket, and connect the adapter to the mains electricity.
4. If required, adjust the underside VIDEO LEVEL trimmer<sup>3</sup>.

<sup>1</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the audio level

<sup>2</sup> You do not have to connect all the outputs

<sup>3</sup> Insert a screwdriver into the small hole and carefully rotate it to adjust the level

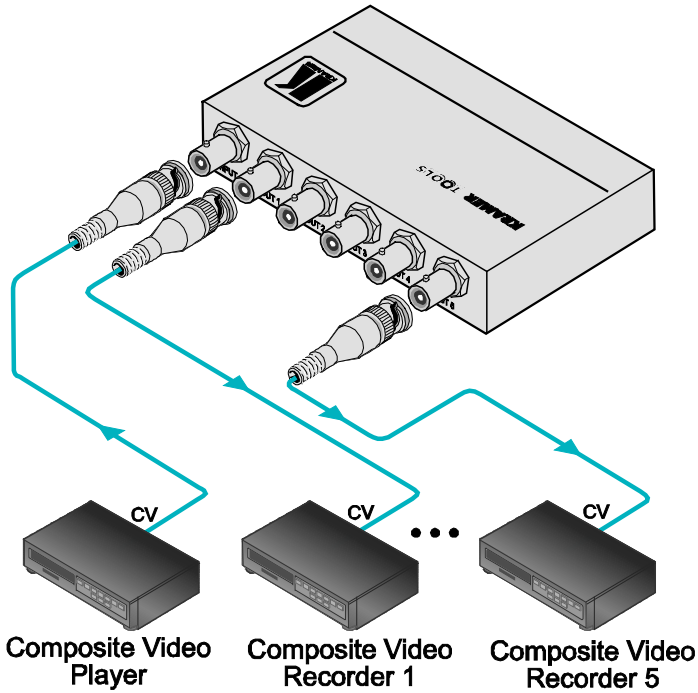


Figure 14: Connecting the 105VB 1:5 High Resolution Video DA

## 9.2 Technical Specifications

Table 14 includes the technical specifications<sup>1</sup>:

Table 14: Technical Specifications of the 105VB 1:5 High Resolution Video DA

INPUT:	1 video, 1Vpp/75 $\Omega$ on a BNC connector.
OUTPUTS:	5 video, 1Vpp/75 $\Omega$ on BNC connectors.
MAX. VIDEO OUTPUT:	2Vpp.
VIDEO BANDWIDTH (-3dB):	400MHz.
DIFF. GAIN:	0.1%.
DIFF. PHASE:	0.1 Deg.
K-FACTOR:	<0.05%
S/N RATIO:	80dB
CONTROL:	Up to +6dB
COUPLING:	AC
POWER SOURCE:	12V DC, 100mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3kg (0.6lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

<sup>1</sup> Specifications are subject to change without notice



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## 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](http://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)



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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://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.



P/N:



2900-009001

Rev:



4

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**Kramer Electronics, Ltd.**

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