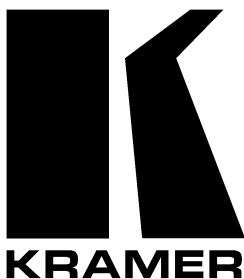


Kramer Electronics, Ltd.



USER MANUAL

Models:

6808, *SDI-AES De-Embedder*

6809, *SDI-AES Embedder*

Contents

1	Introduction	1
2	Getting Started	1
3	Overview	2
3.1	About the 6808 SDI-AES De-Embedder	2
3.2	About the 6809 SDI-AES Embedder	2
3.3	High Signal Quality Recommendations	3
4	Your SDI-AES De-Embedder / SDI-AES Embedder	4
4.1	Your 6808 SDI-AES De-Embedder	4
4.2	Your 6809 SDI-AES Embedder	5
5	Using the SDI-AES De-Embedder / SDI-AES Embedder	5
5.1	Connecting the 6808 SDI-AES De-Embedder	6
5.2	Connecting the 6809 SDI-AES Embedder	7
5.2.1	Setting the GROUP SELECT Dipswitches	8
6	Linking SDI-AES De-Embedder / SDI-AES Embedder Units	8
6.1	Connecting an SDI-AES Embedder to an SDI-AES De-Embedder	8
6.2	Cascading SDI-AES De-Embedder / SDI-AES Embedder Units	9
7	Technical Specifications	12

Figures

Figure 1: 6808 SDI-AES De-Embedder	4
Figure 2: 6809 SDI-AES Embedder	5
Figure 3: Connecting a 6808 SDI-AES De-Embedder	6
Figure 4: Connecting a 6809 SDI-AES Embedder	7
Figure 5: Connecting a 6809 SDI-AES Embedder to a 6808 SDI-AES De-Embedder	8
Figure 6: Cascading SDI-AES De-Embedder / SDI-AES Embedder Units I	10
Figure 7: Cascading SDI-AES De-Embedder / SDI-AES Embedder Units II	11

Tables

Table 1: 6808 SDI-AES De-Embedder	4
Table 2: 6809 SDI-AES Embedder	5
Table 3: GROUP SELECT Dipswitch Settings	8
Table 4: Technical specifications of the 6808 / 6809	12

1 Introduction

Dedication by Kramer Electronics since 1981, to the development and manufacture of high quality video/audio equipment, makes the Kramer line an integral part of the finest production and presentation facilities in the world. In recent years, Kramer has redesigned and upgraded most of the line, making the best even better! The Kramer line of professional video/audio electronics is one of the most versatile and complete available, and is a true leader in terms of quality, workmanship, price/performance ratio and innovation. In addition to our high quality Kramer DigiTOOLS, like the **6808 SDI¹-AES De-Embedder** and **6809 SDI-AES Embedder**, we also offer excellent switchers and matrices, distribution amplifiers, remote controllers, processors, interfaces and computer-related products.

Congratulations on purchasing your Kramer DigiTOOLS **6808 SDI-AES De-Embedder** and/or **6809 SDI-AES Embedder**, which are ideal for broadcast and production studios, as well as digital / analog audio video authoring.

The package includes the following items:

- **6808 SDI-AES De-Embedder** or **6809 SDI-AES Embedder**
- Power adapter (12V DC Input)²
- This user manual³

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 cables⁴

1 Serial Digital Video

2 As an option, you can purchase the Kramer VA-50P 6 Port Universal 12-Volt Power Supply, enabling you to supply power to up to 6 Kramer devices that require 12VDC

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

4 The complete list of Kramer cables is on our Web site at <http://www.kramerelectronics.com> (click "Cables and Connectors" in the Products section)

3 Overview

The Kramer DigiTOOLS **6808 SDI-AES De-Embedder** (see section 3.1) and **6809 SDI-AES Embedder** (see section 3.2) include automatic selection for up to 24 bit digital audio streams, and are compatible with PAL or NTSC video input standards.

3.1 About the 6808 SDI-AES De-Embedder

The **6808 SDI-AES De-Embedder** is a high quality audio de-embedder for serial digital video. It accepts a standard definition SDI source (270Mbps), has a cable equalized (up to 350m of input cable) and reclocked SDI output (loop), and de-embeds the audio from the SDI stream.

In addition, the **6808 SDI-AES De-Embedder**:

- De-embeds four audio channels
- Provides de-embedded audio in digital AES/EBU audio format
- Includes auto-detect 525/625 line format
- Has a serial digital video input with active loop-through
- Can be cascaded to de-embed up to 16 audio channels
- Can be controlled via the GROUP SELECT dipswitches, that let you select the audio group that you want to de-embed
 - Has LEDs that indicate when an SDI signal is being received and when audio is being de-embedded from the video signal

3.2 About the 6809 SDI-AES Embedder

The high quality **6809 SDI-AES Embedder** embeds digital AES/EBU audio with serial digital video. It accepts a standard definition SDI source (270 Mbps), has a cable equalized (up to 350m of input cable) and reclocked SDI output (loop), and embeds the audio into the SDI output stream.

In addition, the **6809 SDI-AES Embedder**:

- Embeds four audio channels
- Embeds digital AES/EBU audio with SDI
- Includes auto-detect 525/625 line format and EDH insertion and generation
- Has a serial digital video input with active loop-through
- Can be controlled via the GROUP SELECT dipswitches, that let you select the audio group that you want to embed
 - Has LEDs that indicate when an SDI signal is being received and when audio is being embedded to the video stream

3.3 High Signal Quality Recommendations

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 that may adversely influence signal quality
- Position your Kramer DigiTOOLS **6808** and/or **6809** away from moisture, excessive sunlight and dust

4 Your SDI-AES De-Embedder / SDI-AES Embedder

Sections 4.1 and 4.2 define the **6808 SDI-AES De-Embedder**, and the **6809 SDI-AES Embedder**, respectively.

4.1 Your 6808 SDI-AES De-Embedder

Figure 1 and Table 1 define the **6808 SDI-AES De-Embedder**:

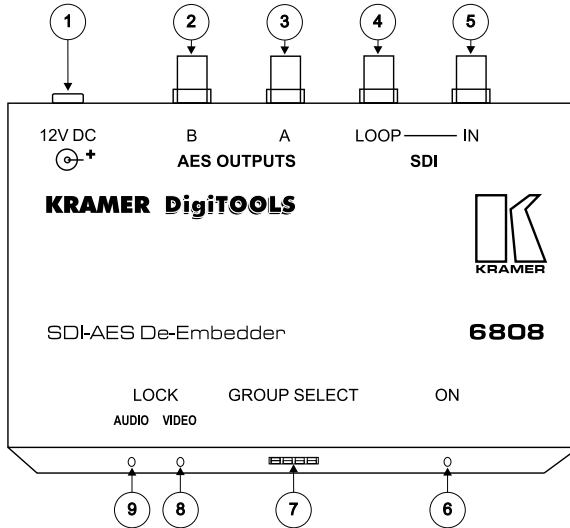


Figure 1: 6808 SDI-AES De-Embedder

Table 1: 6808 SDI-AES De-Embedder

#	Feature		Function
1	12V DC		+12V DC connector for powering the unit
2	AES OUTPUTS	B BNC Connector	Connects to the digital audio acceptor (for channels 3 and 4) ¹
3		A BNC Connector	Connects to the digital audio acceptor (for channels 1 and 2) ¹
4	SDI	LOOP BNC Connector	For active looping of the SDI input
5		IN BNC Connector	Connects to the SDI source
6	ON LED		Illuminates when receiving power
7	GROUP SELECT Dipswitches		Select the audio group
8	VIDEO Green LED		Automatically lights when receiving an SDI signal
9	AUDIO Green LED		Automatically lights when de-embedding audio from the video signal

¹ In accordance with the standard, the audio digital stream contains 2 audio channels

4.2 Your 6809 SDI-AES Embedder

Figure 2 and Table 2 define the **6809 SDI-AES Embedder**:

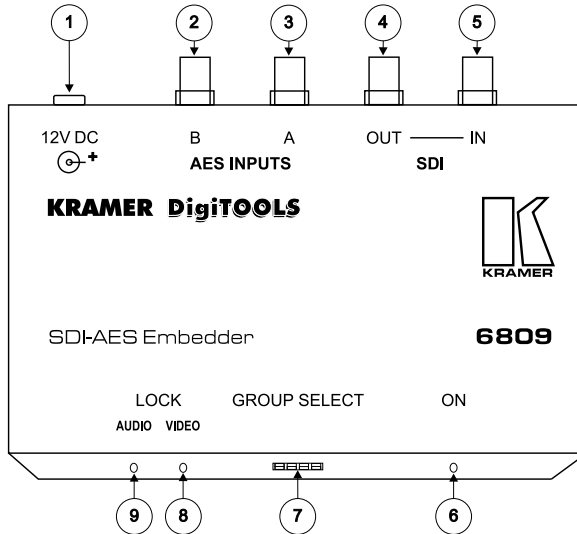


Figure 2: 6809 SDI-AES Embedder

Table 2: 6809 SDI-AES Embedder

#	Feature		Function
1	12V DC		+12V DC connector for powering the unit
2	AES INPUTS	B BNC Connector	Connects to the digital audio source (for channels 3 and 4) ¹
3		A BNC Connector	Connects to the digital audio source (for channels 1 and 2) ¹
4	SDI	OUT BNC Connector	Connects to the SDI acceptor
5		IN BNC Connector	Connects to the SDI source
6	ON LED		Illuminates when receiving power
7	GROUP SELECT Dipswitches		Select the audio group
8	VIDEO Green LED		Automatically lights when receiving an SDI signal
9	AUDIO Green LED		Automatically lights when embedding audio to the video stream

5 Using the SDI-AES De-Embedder / SDI-AES Embedder

Sections 5.1 and 5.2 describe how to connect the **6808 SDI-AES De-Embedder**, and the **6809 SDI-AES Embedder**, respectively.

¹ In accordance with the standard, the audio digital stream contains 2 audio channels

5.1 Connecting the 6808 SDI-AES De-Embedder

To connect the **6808 SDI-AES De-Embedder**, as the example in Figure 3 illustrates, do the following¹:

1. Connect an SDI source (for example, a digital video player) to the SDI IN BNC connector.
2. Connect the SDI LOOP BNC connector (OPTIONAL) to the SDI IN BNC connector on an additional unit to increase outputs (see Figure 7).
3. Connect the AES OUTPUT A BNC connector² (for channels 1-2) to a digital audio acceptor for channels 1 and 2 (for example, DAT-Recorder A)
4. Connect the AES OUTPUT B BNC connector² (for channels 3-4) to a digital audio acceptor for channels 3 and 4 (for example, DAT-Recorder B)
5. Set the GROUP SELECT dipswitches to choose the audio group (see section 5.2.1).
6. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

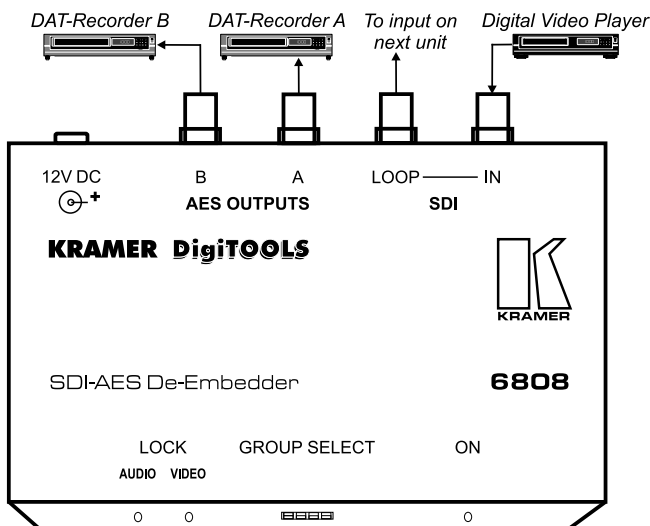


Figure 3: Connecting a 6808 SDI-AES De-Embedder

¹ Switch OFF the power on each device before connecting it to your 6808. After connecting your 6808, switch on its power and then switch on the power on each device. Switching on the 6808, recalls the last status prior to powering down

² When only one digital audio stream containing 2 audio channels is required, use either of the AES outputs, and leave the other AES output unconnected

5.2 Connecting the 6809 SDI-AES Embedder

To connect the **6809 SDI-AES Embedder**, as the example in Figure 4 illustrates, do the following¹:

1. Connect an SDI source (for example, a digital video player) to the SDI IN BNC connector.
2. Connect the SDI OUT BNC connector to an SDI and AES/EBU acceptor or to the SDI IN BNC connector on a **6808 SDI-AES De-Embedder** unit (see Figure 6).
3. Connect an AES digital audio source (for example, DAT-Player A) to the AES INPUT A BNC connector (for channels 1-2).
4. Connect an AES digital audio source (for example, DAT-Player B) to the AES INPUT B BNC connector (for channels 3-4).
5. Set the GROUP SELECT dipswitches to choose the audio group (see section 5.2.1).
6. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

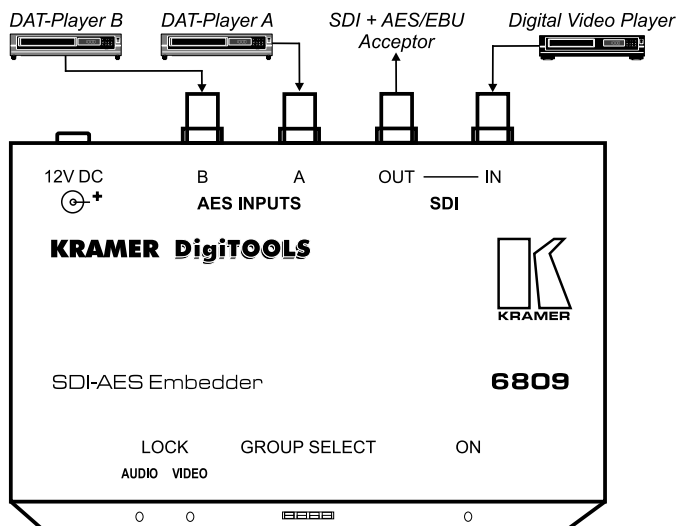


Figure 4: Connecting a 6809 SDI-AES Embedder

¹ Switch OFF the power on each device before connecting it to your 6809. After connecting your 6809, switch on its power and then switch on the power on each device. Switching on the 6809, recalls the last status prior to powering down

5.2.1 Setting the GROUP SELECT Dipswitches

Set the GROUP SELECT dipswitches¹ to choose the audio group. For example, to choose audio group 3, set DIP 3 OFF².

Table 3: GROUP SELECT Dipswitch Settings

DIP	Description
1	Selects audio group 1
2	Selects audio group 2
3	Selects audio group 3
4	Selects audio group 4

6 Linking SDI-AES De-Embedder / SDI-AES Embedder Units

Section 6.1 describes how to connect a **6809 SDI-AES Embedder** to a **6808 SDI-AES De-Embedder**. Section 6.2 describes how to cascade **6809 SDI-AES Embedder** / **6808 SDI-AES De-Embedder** units.

6.1 Connecting an SDI-AES Embedder to an SDI-AES De-Embedder

You can use a single coax cable (as opposed to separate audio and video cables) to transmit video (SDI) and audio (AES) data up to 300m. To do so, connect the SDI OUT BNC connector of the **6809 SDI-AES Embedder** to the SDI IN BNC connector on the **6808 SDI-AES De-Embedder**, as the example in Figure 5 illustrates:

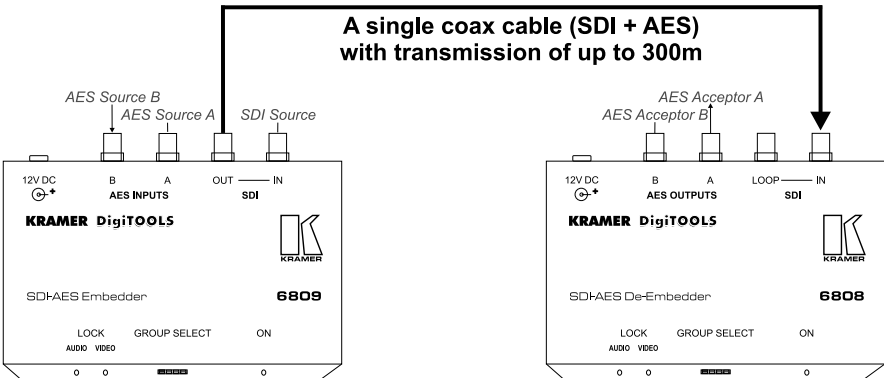


Figure 5: Connecting a 6809 SDI-AES Embedder to a 6808 SDI-AES De-Embedder

1 Item 7 in Figure 1 (the 6808 SDI-AES De-Embedder) and in Figure 2 (the 6809 SDI-AES Embedder)
2 The highest number DIP takes priority. For example, if DIP 2 and DIP 3 are both OFF, audio group 3 is chosen; if all DIPs are OFF, audio group 4 is chosen

6.2 Cascading SDI-AES De-Embedder / SDI-AES Embedder Units

You can cascade up to four interconnected **6809 SDI-AES Embedder** units with up to four interconnected **6808 SDI-AES De-Embedder** units¹ to provide eight streams of AES, each stream containing two digital audio channels (see Figure 6 and Figure 7).

To cascade four **6809** and four **6808** units, do the following:

1. Connect up to 16 analog audio sources to the analog inputs on an **AES Audio Router (A/D)**, and connect each of the eight AES outputs².
2. Connect an SDI source to the SDI IN BNC connector on the **6809** unit # 1 and interconnect³ the four **6809** units.
3. Connect the SDI OUT BNC connector on **6809** unit # 4 to the SDI IN BNC connector on **6808** unit # 1, and interconnect⁴ the four **6808** units.
4. Connect the two AES OUTPUT BNC connectors on each **6808** unit⁵.
5. On each **6809** / **6808** unit, set the GROUP SELECT dipswitches to choose the audio group (see section 5.2.1).
6. On each **6809** / **6808** unit, connect a 12V DC power adapter to the power socket and connect the adapter to the mains electricity⁶.

1 Using a single coax cable (SDI + AES) with a transmission of up to 300m

2 Connect the AES OUTPUT 1 to the AES INPUT A BNC connector, and the AES OUTPUT 2 to the AES INPUT B BNC connector (6809 unit # 1). Connect the AES OUTPUT 3 to the AES INPUT A BNC connector, and the AES OUTPUT 4 to the AES INPUT B BNC connector (6809 unit # 2). Connect the AES OUTPUT 5 to the AES INPUT A BNC connector, and the AES OUTPUT 6 to the AES INPUT B BNC connector (6809 unit # 3). Connect the AES OUTPUT 7 to the AES INPUT A BNC connector, and the AES OUTPUT 8 to the AES INPUT B BNC connector (6809 unit # 4)

3 Connect the SDI OUT BNC connector on unit # 1 to the SDI IN BNC connector on unit # 2; connect the SDI OUT BNC connector on unit # 2 to the SDI IN BNC connector on unit # 3; and connect the SDI OUT BNC connector on unit # 3 to the SDI IN BNC connector on unit # 4

4 Connect the SDI LOOP BNC connector on unit # 1 to the SDI IN BNC connector on unit # 2; connect the SDI LOOP BNC connector on unit # 2 to the SDI IN BNC connector on unit # 3; and connect the SDI LOOP BNC connector on unit # 3 to the SDI IN BNC connector on unit # 4

5 On 6808 unit # 1, connect the AES OUTPUT A BNC connector to the AES stream 1, and the AES OUTPUT B BNC connector to the AES stream 2. On 6808 unit # 2, connect the AES OUTPUT A BNC connector to the AES stream 3, and the AES OUTPUT B BNC connector to the AES stream 4. On 6808 unit # 3, connect the AES OUTPUT A BNC connector to the AES stream 5, and the AES OUTPUT B BNC connector to the AES stream 6. On 6808 unit # 4, connect the AES OUTPUT A BNC connector to the AES stream 7, and the AES OUTPUT B BNC connector to the AES stream 8

6 As an option, you can purchase the Kramer VA-50P 6 Port Universal 12-Volt Power Supply, enabling you to supply power to up to 6 Kramer devices that require 12VDC

Linking SDI-AES De-Embedder / SDI-AES Embedder Units

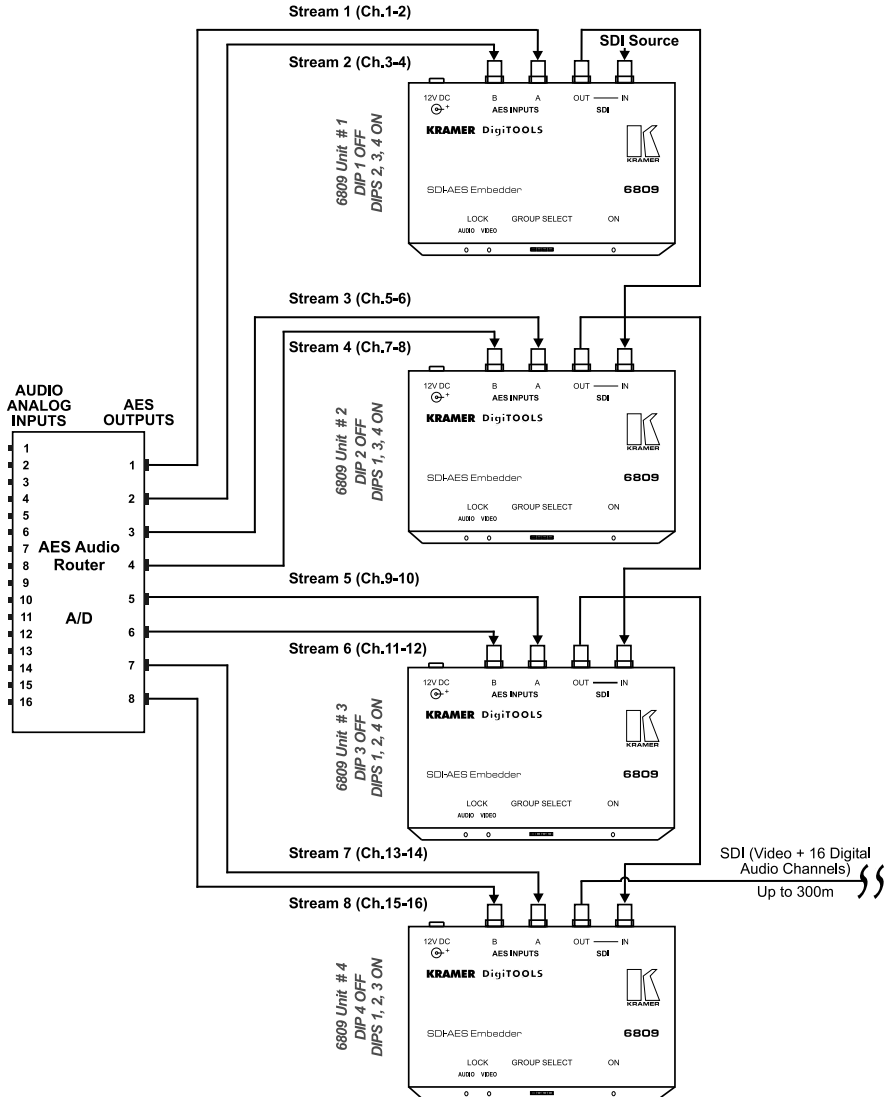


Figure 6: Cascading SDI-AES De-Embedder / SDI-AES Embedder Units I

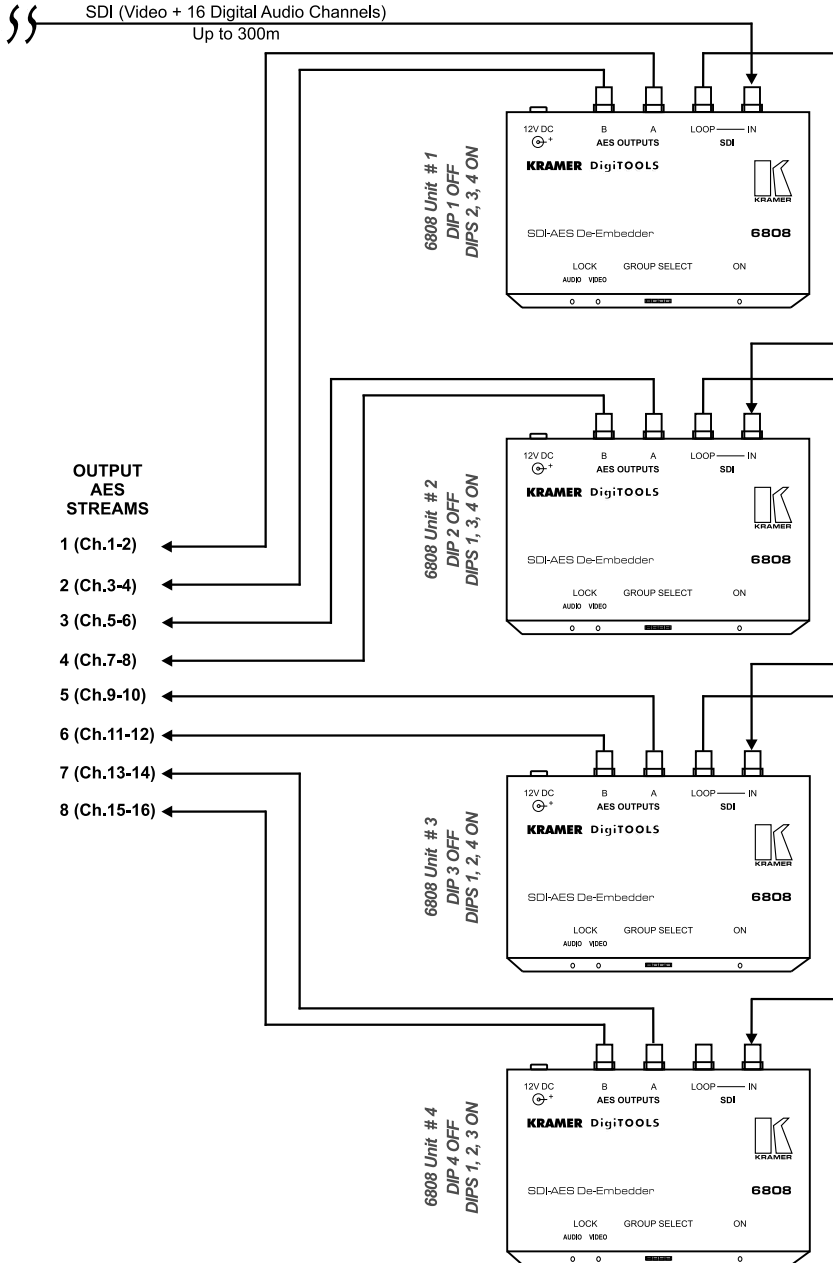


Figure 7: Cascading SDI-AES De-Embedder / SDI-AES Embedder Units II

7 Technical Specifications

Table 4 includes the technical specifications of the **6808 SDI-AES De-Embedder** and the **6809 SDI-AES Embedder**:

Table 4: Technical specifications¹ of the 6808 / 6809

	6808	6809
INPUTS:	1 x SDI @ 270Mbps/s	1 x SDI, 2 x AES/EBU on BNC Connectors
OUTPUTS:	1 x SDI, 2 x AES/EBU	1 x SDI on a BNC Connector
CONTROLS:	Group Select	Group Select
POWER SOURCE:	12 VDC, 300mA	12 VDC, 400mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 0.98" x 2.95"), W, D, H	
WEIGHT:	0.3kg. (0.66lbs.)	
ACCESSORIES:	Power supply, mounting bracket	
OPTIONS:	19" rack adapters RK-T1, RK-T3	

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 three 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.
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.



For the latest information on our products and a list of Kramer distributors, visit our Web site: www.kramerelectronics.com.

**Updates to this user manual may be found at
<http://www.kramerelectronics.com/manuals.html>.**

We welcome your questions, comments and feedback.



Kramer Electronics, Ltd.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com

P/N: 2900-006808 REV 2