Kramer Electronics, Ltd.

USER MANUAL

Model:

6809HD

HD/SD-SDI AES Embedder

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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[1] that are clearly defined by function.

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

The package includes the following items:

- **6809HD** *HD/SD-SDI AES Embedder*
- Power adapter (12V DC Input)
- This user manual[2]

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[3]

2.1 Quick Start

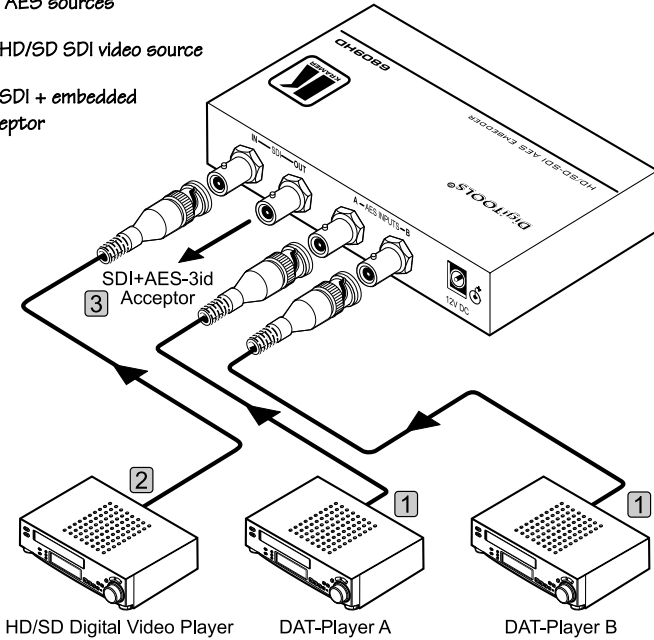This quick start chart summarizes the basic setup and operation steps.

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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

Step 1: Connect the input and the outputs - see section 5

1 Connect the AES sources

2 Connect the HD/SD SDI video source

3 Connect the SDI + embedded
   AES-3id acceptor

SDI+AES-3id
3 Acceptor

HD/SD Digital Video Player   DAT-Player A   DAT-Player B

Step 2: Set the dipswitches - see section 5

GROUP SELECT

OFF

ON
     1 2 3 4

By default, the GROUP SELECT
dipswitches are set to group 1.

Set the dipswitches to assign the audio
group number for a machine.

For example, set DIP 1 to OFF to assign
the audio channels to group 1.

When cascading, the highest number DIP takes
priority.

Step 3: Connect the power

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3 Overview

The Kramer **6809HD** *HD[1] / SD[2]-SDI AES Embedder* is a broadcast quality audio embedder for serial digital video.

The **6809HD**:

- Accepts a standard definition/high definition SDI source (270Mbps/1.5Gbps)
- Has an equalized and reclocked SDI output, and embeds the audio to the SDI stream
- Embeds up to four audio signals (two stereo inputs) of AES-3id audio
- Auto-detects SD/HD[3] video formats
- Can be controlled via the group select dipswitches, letting you select the audio group to which 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
- Is 12VDC fed

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 and position your Kramer DigiTOOLS **6809HD** 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[4].

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

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1 High Definition (HD) means a video format, consisting of 720 active lines of progressive video or 1080 lines of progressive or interlaced video

2 Standard Definition (SD) means an NTSC or PAL compatible video format, consisting of 480 (for NTSC) or 576 (for PAL) lines of interlaced video

3 The VIDEO LED lights in green when an SD signal is detected and in blue when an HD signal is detected

4 For example: model number AD2512C, part number 2535-000251

4 Your 6809HD HD/SD-SDI AES Embedder

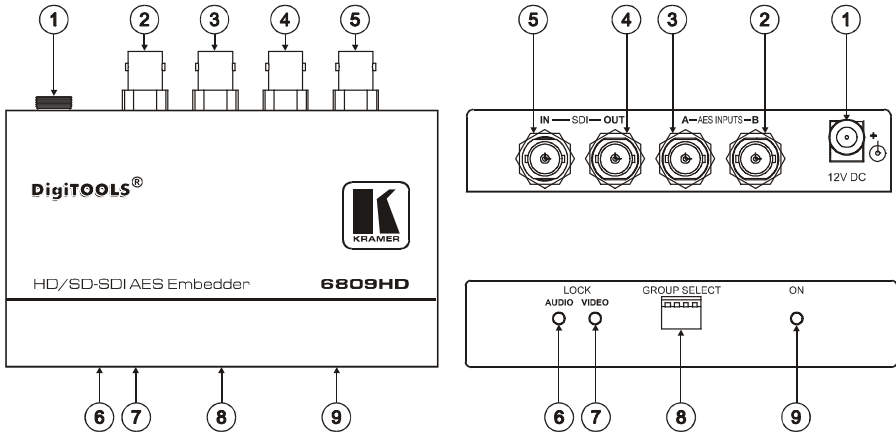Figure 1 and Table 1 define the **6809HD** *HD/SD-SDI AES Embedder*:

Figure 1: 6809HD HD/SD-SDI AES Embedder

Table 1: 6809HD HD/SD-SDI AES Embedder Features

#	Feature		Function
1	*12V DC*		+12V DC connector for powering the unit
2	*AES*	*B* BNC Connector	Connects to the digital audio source (for channels 3 and 4)[1]
3	*INPUTS*	*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	*LOCK*	*AUDIO* LED	Lights when embedding audio into the video stream
7		*VIDEO* LED	Lights in green when receiving an SD-SDI signal Lights in blue when receiving an HD-SDI signal
8	*GROUP SELECT* Dipswitches		Select the audio group
9	*ON LED*		Lights when receiving power

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

5 Connecting the 6809HD HD/SD-SDI AES Embedder

To connect the **6809HD** *HD/SD-SDI AES Embedder*, as illustrated in the example in Figure 2, do the following[1]:

1. Connect an SDI source (for example, an HD/SD digital video player) to the SDI IN BNC connector.

2. Connect the SDI OUT BNC connector to an SDI and AES-3id acceptor.

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 5.1).

6. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in Figure 2).
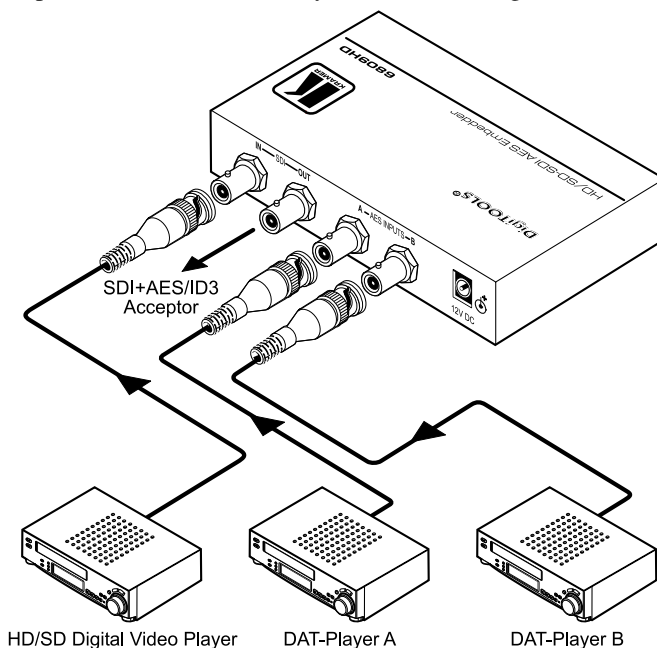
Figure 2: Connecting a 6809HD SDI-AES Embedder

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

5.1 Setting the GROUP SELECT Dipswitches

Figure 3 shows the **6809HD** GROUP SELECT dipswitches (by default, the dipswitches are set to "audio group 1"):

GROUP SELECT

OFF

ON

1 2 3 4

Figure 3: 6809HD Dipswitches

Each group includes four audio channels (or two stereo audio channels). These channels can be assigned to a group. You can set the GROUP SELECT dipswitches to choose the audio group. For example, to choose audio group 3, set DIP 3 OFF and the remaining DIPs ON. Table 2 defines the GROUP SELECT dipswitches.

Table 2: GROUP SELECT Dipswitch Settings

DIP1	DIP2	DIP3	DIP4	Description
OFF	ON	ON	ON	Selects audio group 1
ON	OFF	ON	ON	Selects audio group 2
ON	ON	OFF	ON	Selects audio group 3
ON	ON	ON	OFF	Selects audio group 4

6   Cascading 6809HD Machines

You can cascade up to four interconnected **6809HD** *SDI-AES Embedder* units to create four streams of AES, each stream containing two digital audio channels (see Figure 4).

To cascade four **6809HD** units, do the following:

1. On each **6809HD** unit, connect the A and B AES INPUTS.

2. Connect an SDI source to the SDI IN BNC connector on the **6809HD** unit # 1 and interconnect[1] the four **6809HD** units.

3. Connect the SDI OUT BNC connector on the **6809HD** unit # 4 to an SDI+AES-3id acceptor.

4. On each **6809HD** unit, set the GROUP SELECT dipswitches to choose the audio group (see section 5.1).

5. On each **6809HD** unit, connect a 12V DC power adapter to the power socket and connect the adapter to the mains electricity.

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1 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
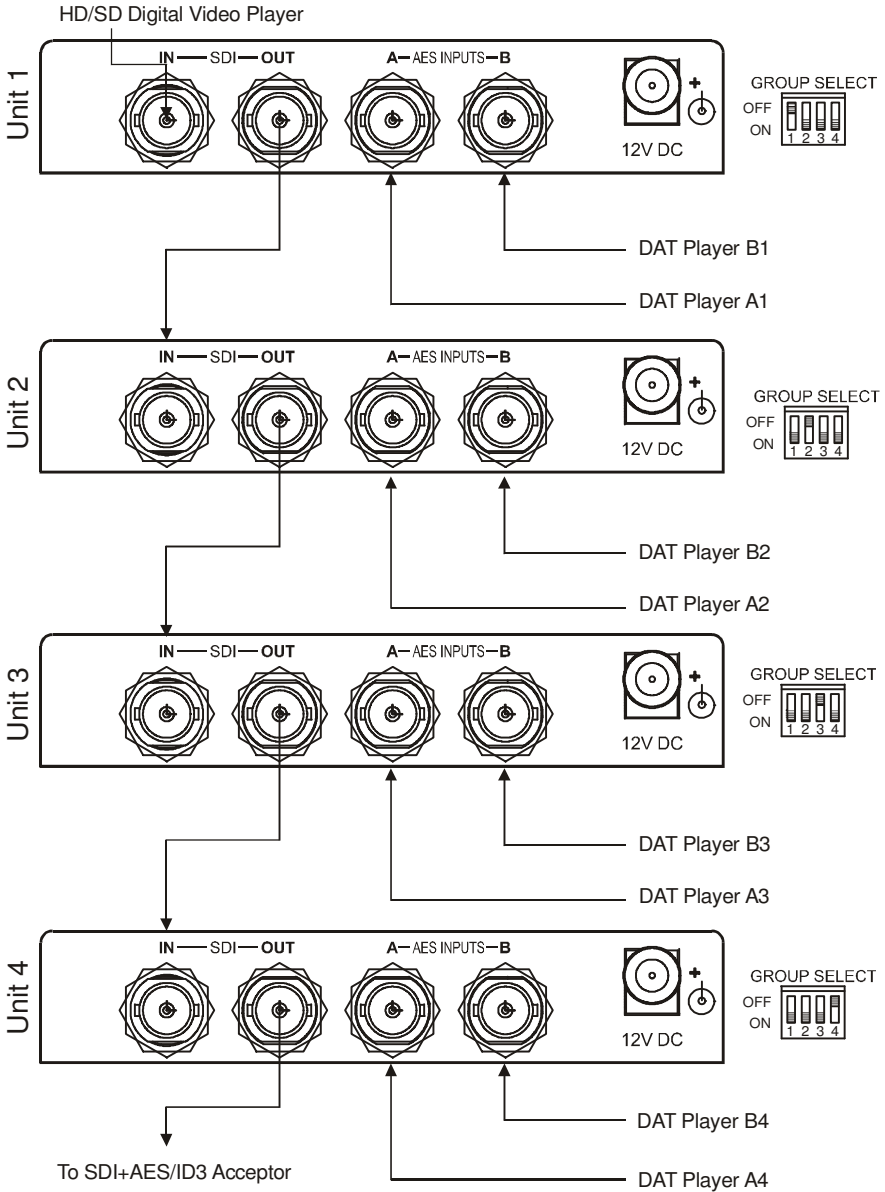
Figure 4: Cascading Four 6809HD SDI-AES Embedder Units

7   Technical Specifications

Table 3 includes the technical specifications of the **6809HD** *SDI-AES Embedder*:

Table 3: Technical specifications[1] of the 6809HD SDI-AES Embedder

INPUTS:	1 x SDI, 2 x AES-3id on BNC Connectors
OUTPUT:	1 x SDI on a BNC Connector
CONTROLS:	Group select
POWER SOURCE:	12 VDC, 450mA
DIMENSIONS:	12cm x 6.95cm x 2.44cm (4.7" x 2.74" x 0.96"), W, D, H
WEIGHT:	0.3kg. (0.66lbs.)
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	19" rack adapters

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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)

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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.

Safety Warning:
Disconnect the unit from the power supply before opening/servicing.

Caution

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