Kramer Electronics, Ltd.



USER MANUAL

Model:

VP-727A-BA Balanced Audio Switcher

Cont	ents						
1	Introduction	1					
2	Getting Started	1					
2.1	Quick Start	1					
3	Overview	3					
4	Your VP-727A-BA Balanced Audio Switcher	3					
5	Installing the VP-727A-BA in a Rack	7					
6	Configuring the VP-727A-BA Balanced Audio Switcher	8					
6.1	Connecting the VP-727A-BA Balanced Audio Switcher	8					
6.2	Connecting a PC (via RS-232) to a Standalone VP-727A-BA	10					
6.3	Configuring the VP-727A-BA with the VP-727xl and the VP-727T	11					
6.4	Connecting via RS-485	13					
6.4.1	Connecting the VP-727A-BA to the VP-727T via the VP-727xl	13					
6.4.2	Connecting the VP-727A-BA to the VP-727T via the VP-727	15					
7	Flash Memory Upgrade	17					
7.1	Downloading from the Internet	17					
7.2	Connecting the PC to the RS-232 Port	17					
7.3	Upgrading Firmware	18					
8	Technical Specifications	22					
9	Kramer VP-727A-BA Protocol (Ver. 3.21)	23					
Figu	res						
Figure	1: VP-727A-BA Balanced Audio Switcher	4					
Figure	2: Connecting the VP-727A-BA with a VP-727xl Machine	9					
Figure	3: Connecting the PC	10					
Figure	4: Connecting 2 VP-727A-BA machines to the VP-727T via 2 VP-727xl Machines	11					
Figure	5: Connecting the VP-/2/A-BA to the VP-/2/I via the VP-/2/ 6: PS 485 Configuration between the VP 727A BA and the VP 727vl	12					
riguie	Figure 6: KS-485 Configuration between the VP-/2/A-BA and the VP-/2/XI 14						

- Figure 6: RS-485 Configuration between the VP-727A-BA and the VP-727xl Figure 7: RS-485 Configuration between the VP-727A-BA and the VP-727 Figure 8: Splash Screen
- Figure 8: Splash Screen18Figure 9: Atmel Flip Window18Figure 10: Device Selection Window19Figure 11: Selecting the Device Window19Figure 12: Loading the Hex20Figure 13: RS-232 Window20Figure 14: Atmel Flip Window (Connected)21Figure 15: Atmel Flip Window (Operation Completed)21

Tables

Table 1: VP-727A-BA Balanced Audio Switcher Front Panel Features	5
Table 2: VP-727A-BA Balanced Audio Switcher Rear Panel Features	6
Table 3: Technical Specifications of the VP-727A-BA Balanced Audio Switcher	22
Table 4: Instruction Codes for the VP-727A-BA Protocol	23



16

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.

Congratulations on purchasing your Kramer **VP-727A-BA** *Balanced Audio Switcher*, which is ideal for staging events, as well as:

- Presentation applications that require an audio preview option
- Projection systems with sound in conference rooms, board rooms, auditoriums, hotels, and houses of worship

The package includes these items:

- VP-727A-BA Balanced Audio Switcher
- Power cord²
- Null-modem adapter
- This user manual

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 manual³
- Use Kramer high performance high resolution cables⁴

2.1 Quick Start

This quick start chart summarizes the basic steps when connecting a VP-727A-BA:

⁴ The complete list of Kramer cables is on our Web site at http://www.kramerelectronics.com



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 We recommend that you use only the power cord that is supplied with the machine

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

Getting Started



3 Overview

The Kramer **VP-727A-BA** is a high performance 8x2 switcher for balanced stereo audio signals. It switches any input to either the preview or program output. The **VP-727A-BA** is an audio companion switcher for the **VP-727xl** Universal Presentation Matrix Switcher / Scaler and the **VP-727** Universal Presentation Matrix Switcher / Scaler, and operates in conjunction with them and the **VP-727T** Presentation Switcher Control Panel.

The VP-727A-BA features:

- Eight balanced stereo audio inputs on XLR F connectors
- One balanced stereo audio preview output on dual XLR M connectors
- Two balanced stereo audio program outputs on dual XLR M connectors and a single RCA (S/PDIF) connector
- A selectable headphone connector for preview or program audio outputs
- A front panel lockout
- A TAKE button for executing preview to program switching (with transition effects)
- An audio-follow-video button when operating in conjunction with the VP-727xl or the VP-727
- Separate input and output level control
- Fade to mute audio switching
- Separate mute buttons for the preview and program channels
- Bass, treble and balance audio controls
- Audio delay for each input channel

The VP-727A-BA:

- Can be controlled via the front panel buttons and/or RS-232
- Is housed in a 19" 2U rack mountable enclosure

Achieving the best performance means:

- Connecting 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)
- Avoiding interference from neighboring electrical appliances, making sure not to block the ventilation holes, and positioning your **VP-727A-BA** away from moisture, excessive sunlight and dust

4 Your VP-727A-BA Balanced Audio Switcher

Figure 1, Table 1 and Table 2 define the VP-727A-BA:





Figure 1: VP-727A-BA Balanced Audio Switcher

#	Feature	eature Function			
1	POWER Switch	า	Illuminated switch for turning the unit ON or OFF		
2	PREVIEW Input Buttons		Press to select an audio source to switch to the PREVIEW output ¹		
3	PROGRAM Inp	out Buttons	Press to select an audio source to switch to the PROGRAM output ¹		
4	MUTE Preview Button		Press to disable/enable the preview audio output		
5		Program Button	Press to disable/enable the program audio output		
6	CONTROL SE	LECT Button	Press to cycle ² between the BASS, TREBLE, BALANCE and DELAY ³		
7	IN LEVEL Butto	on	Press to select ² the PROGRAM or the PREVIEW input audio level for each program and preview channel		
8	OUT LEVEL Button		Press to select ² the PROGRAM, the PREVIEW or the PHONES outp audio level		
9	LOCK Button		Press and hold to lock/unlock the front panel buttons		
10	PHONES 6.3mm Jack		Connect to the headphones		
11	Button		Press to select ² which output (PROGRAM or the PREVIEW) to send to the headphones		
12	AUDIO LEVEL	7-segment Display	Displays the numerical value of the CONTROL feature ⁴		
13	+ Button		Press to increase the level ⁴		
14	- Button		Press to decrease the level ⁴		
15	TAKE Button	Button Press to swap the preview input with the program input ⁵			
16	FADE Button		Press to create a dissolved transition from the PREVIEW to the PROGRAM output		
17	AFV Button		When pressed, the button is illuminated, and the audio channels follow the video channels (on the VP-727xI or the VP-727)		
			Deselect AFV to switch the audio channels independently		

Table 1: VP-727A-BA Balanced Audio Switcher Front Panel Features

¹ From 1 to 8

² The appropriate LED lights

³ The BASS, TREBLE and BALANCE levels are set for the PROGRAM output. The DELAY is set for each PROGRAM input

⁴ BASS, TREBLE, BALANCE, DELAY, audio input level (PREVIEW AND PROGRAM), and audio output level (PREVIEW AND PROGRAM)

⁵ To reset the VP-727A-BA to its factory default settings, turn the unit OFF, then turn it ON while pressing the TAKE button for about 2 seconds: The preview and program input is set to input 1, the input volume resets to 0dB, and the bass and treble levels reset to 0

#	Feature			Function			
18	INPUT	۲ XLR F	RIGHT	Connect to the balanced stereo audio source (from 1 to 8)			
19	Conne	ectors	LEFT				
20	6	PREVIEW XLR LEFT		Connect to a balanced stereo audio preview acceptor			
21	Ĕ	M Connectors	RIGHT				
22	ΤΡ(S/PDIF RCA Connector		Connect to a digital audio acceptor			
23	2	PROGRAM XLR	RIGHT	Connect to a balanced stereo audio program acceptor			
24		M Connectors	LEFT				
25		DIP 8		Set to ON to operate the VP-727A-BA with the VP-727xI (as slave baud rate 38,400); else set to OFF			
	-	DIP 7	Set to ON to operate the VP-727A-BA with the VP-727 or the VP-727T (as chain baud rate 115,200); else set to OFF				
	SETUP DIPS	L DIP 6		Set to ON for stand alone (baud rate 9,600); else set to OFF			
		DIP 5		Set to ON for the fade to follow the transition effect; set to OFF for separate fade			
		DIPs 3 and 4		Set to OFF (default)			
		0)	0)	0	DIP 2		Set to ON for RS-485 Line Termination with 120Ω ; set to OFF for no RS-485 Line Termination
		DIP 1		Set to ON to upgrade to the latest Kramer firmware (see section 7); set to OFF for normal operation (the factory default)			
26	26 RS-485 Port			Connects to the Kramer VP-727T or the VP-727xI (see section 6.4) Pin G is for the Ground connection ² ; pins B (-) and A (+) are for RS-485			
27	RS-23	2 Connector		9-pin D-sub connector connects to a PC or Remote Controller via a null-modem connection			
28	Power Connector with Fuse		ise	AC connector enabling power supply to the unit			

Table 2: VP-727A-BA Balanced Audio Switcher Rear Panel Features

¹ By default, DIPs 1 to 7 are set to OFF and DIP 8 is set to ON

² The ground connection is sometimes connected to the shield of the RS-485 cable. However, usually the ground is not connected

5 Installing the VP-727A-BA in a Rack

This section describes what to do before installing in a rack and how to rack mount.

Before	Installing	in	а	Rack
001010	motuning		-	

Before installing in a rack, be sure that the environment is within the recommended range:						
Operating temperature range	+5° to +45° C (41° to 113° F)					
Operating humidity range	10 to 90% RHL, non-condensing					
Storage temperature range	-20° to +70° C (-4° to 158° F)					
Storage humidity range	5 to 95% RHL, non-condensing					



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

- 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.

How to Rack Mount

To rack-mount a machine:

 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.



 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 that:

- 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 (you can download it at: http://www.kramerelectronics.com)

6 Configuring the VP-727A-BA Balanced Audio Switcher

This section describes how to:

- Connect the **VP-727A-BA** (see section 6.1)
- Connect a PC (see section 6.2)
- Configure an AV presentation switcher, with a controller (see section 6.3)
- Connect via the RS-485 (see section 6.4)

6.1 Connecting the VP-727A-BA Balanced Audio Switcher

To connect¹ the **VP-727A-BA** as the example in Figure 2 illustrates, do the following²:

- 1. Connect the balanced audio sources to the inputs³. For example, the balanced audio signal of:
 - A DVD player to the INPUT 1 LEFT and RIGHT XLR connectors
 - A camera to the INPUT 3 LEFT and RIGHT XLR connectors
 - A mixer to the INPUT 8 LEFT and RIGHT XLR connectors
- 2. Connect the following balanced audio outputs⁴:
 - The PREVIEW LEFT and RIGHT XLR connectors to a Preview acceptor (for example, a professional power amplifier with speakers)
 - The PROGRAM LEFT and RIGHT XLR connectors to a Program acceptor (for example, a professional power amplifier with speakers)
- 3. Connect the RS-485 terminal block connector on the **VP-727A-BA** to the AUDIO CONTROL terminal block connector of the Kramer **VP-727xl**.
- 4. On the **VP-727A-BA**, set DIP 8 to ON⁵. Make sure that all the other dipswitches are set to OFF.
- 5. Connect the RS-485 terminal block connector on the VP-727xl (see section 6.3) to the RS-485 terminal block connector of the VP-727T.
- 6. Connect the power $cord^6$ (not shown in Figure 2).

¹ You do not have to connect all the inputs and outputs

² Switch OFF the power on each device before connecting it to your VP-727A-BA. After connecting your VP-727A-BA, switch on its power and then switch on the power on each device

³ The video inputs are connected to the VP-727xl in this example. Refer to the separate user manuals for these machines, which can be downloaded from the Internet at this URL: http://www.kramerelectronics.com

⁴ You can also connect the S/PDIF digital audio RCA connector and the balanced stereo audio terminal block connector to the appropriate audio acceptors (not illustrated in Figure 2)

⁵ When connecting the VP-727A-BA to the VP-727, set DIP 7 to ON and make sure that all the other dipswitches are set to OFF

⁶ We recommend that you use only the power cord that is supplied with this machine



Figure 2: Connecting the VP-727A-BA with a VP-727xl Machine

6.2 Connecting a PC (via RS-232) to a Standalone VP-727A-BA¹

You can connect a PC (or other controller) to a standalone **VP-727A-BA** via the RS-232 port for remote control and for upgrading the firmware.

To connect a PC to a **VP-727A-BA** unit, using the Null-modem adapter provided with the machine (recommended):

• Connect the RS-232 9-pin D-sub rear panel port on the VP-727A-BA unit to the Null-modem adapter and connect the Null-modem adapter with a 9-wire flat cable to the RS-232 9-pin D-sub port on your PC

To connect a PC to a VP-727A-BA unit, without using a Null-modem adapter:

• Connect the RS-232 9-pin D-sub port on your PC to the RS-232 9-pin D-sub rear panel port on the **VP-727A-BA** unit, forming a cross-connection², as Figure 3 illustrates



Figure 3: Connecting the PC

¹ When the VP-727A-BA is configured with the VP-727xl, the audio follows the video and the VP-727A-BA cannot be controlled via a PC

² Also known as a Null-modem connection

6.3 Configuring the VP-727A-BA with the VP-727xl¹ and the VP-727T

The VP-727A-BA can be controlled by the VP-727T in conjunction with one or more VP-727xl or VP-727 units. The VP-727A-BA can be connected to the:

- VP-727xl (see Figure 4) or the VP-727 (see Figure 5)
- VP-727T via the VP-727xl or the VP-727 using the RS-485 ports

The example in Figure 4 illustrates how to connect two VP-727A-BA machines and two VP-727xl machines to a VP-727T controller.

On each **VP-727A-BA** machine, set DIP 8 to ON. The other dipswitches are set to OFF



Figure 4: Connecting 2 VP-727A-BA machines to the VP-727T via 2 VP-727xl Machines

1 Or the VP-727



The example in Figure 5 illustrates how to connect a **VP-727A-BA** and a **VP-727** machine to a **VP-727T** controller.

On the VP-727A-BA, set DIP 7 to ON. The other dipswitches are set to OFF



Figure 5: Connecting the VP-727A-BA to the VP-727T via the VP-727

6.4 Connecting via RS-485

You can connect the **VP-727A-BA** to the **VP-727T**, via RS-485 communication, via the **VP-727xl** (see section 6.4.1) or via the **VP-727** (see section 6.4.2).

6.4.1 Connecting the VP-727A-BA to the VP-727T via the VP-727xI

To connect the **VP-727A-BA** to the Kramer **VP-727T** *Presentation Switcher Control Panel* via the RS-485 control port, as illustrated in the example in Figure 6, do the following:

- 1. Connect the VP-727A-BA to the VP-727xl as follows:
 - Connect the "A" (+) PIN on the RS-485 rear panel port of the VP-727A-BA to the A (+) PIN on the AUDIO CONTROL rear panel port of the VP-727xl unit
 - Connect the "B" (-) PIN on the RS-485 rear panel port of the VP-727A-BA to the B (-) PIN on the AUDIO CONTROL rear panel port of the VP-727xl unit
 - If shielded twisted pair cable is used, the shield may be connected to the "G" (Ground) PIN on one of the units
- 2. Connect the VP-727xl to the VP-727T as follows:
 - Connect the "A" (+) PIN on the RS-485 rear panel port of the VP-727xl to the A (+) PIN on the RS-485 rear panel port of the VP-727T unit
 - Connect the "B" (-) PIN on the RS-485 rear panel port of the VP-727xl to the B (-) PIN on the RS-485 rear panel port of the VP-727T unit
 - If shielded twisted pair cable is used, the shield may be connected to the "G" (Ground) PIN on one of the units
- 3. On the rear side, slide the SETUP DIP 2 to ON for RS-485 termination.





Figure 6: RS-485 Configuration between the VP-727A-BA and the VP-727xl

6.4.2 Connecting the VP-727A-BA to the VP-727T via the VP-727

To connect the **VP-727A-BA** to the Kramer **VP-727T** *Presentation Switcher Control Panel* via the RS-485 control port, as illustrated in the example in Figure 7, do the following:

- 1. Connect the VP-727A-BA to the VP-727 as follows:
 - Connect the "A" (+) PIN on the RS-485 rear panel port of the VP-727A-BA to the A (+) PIN on the RS-485 rear panel port of the VP-727 unit
 - Connect the "B" (-) PIN on the RS-485 rear panel port of the VP-727A-BA to the B (-) PIN on the AUDIO CONTROL rear panel port of the VP-727 unit
 - If shielded twisted pair cable is used, the shield may be connected to the "G" (Ground) PIN on one of the units
- 2. Connect the **VP-727** to the **VP-727T** as follows:
 - Connect the "A" (+) PIN on the RS-485 rear panel port of the VP-727 to the A (+) PIN on the RS-485 rear panel port of the VP-727T unit
 - Connect the "B" (-) PIN on the RS-485 rear panel port of the VP-727 to the B (-) PIN on the RS-485 rear panel port of the VP-727T unit
 - If shielded twisted pair cable is used, the shield may be connected to the "G" (Ground) PIN on one of the units
- 3. On the rear side, slide the SETUP DIP 2 to ON for RS-485 termination.





Figure 7: RS-485 Configuration between the VP-727A-BA and the VP-727

7 Flash Memory Upgrade

The **VP-727A-BA** firmware is located in FLASH memory, which lets you upgrade¹ to the latest Kramer firmware version in minutes! The process involves:

- Downloading from the Internet (see section 7.1)
- Connecting the PC to the RS-232 port (see section 7.2)
- Upgrading Firmware (see section 7.3)

7.1 Downloading from the Internet

You can download the up-to-date file² from the Internet. To do so:

- 1. Go to our Web site at www.kramerelectronics.com and download the file: "*FLIP_VP727A-BA.zip*" from the Technical Support section.
- 2. Extract the file: "*FLIP_VP727A-BA.zip*" to a folder (for example, C:\Program Files\Kramer Flash).
- 3. Create a shortcut on your desktop to the file: "FLIP.EXE".

7.2 Connecting the PC to the RS-232 Port

Before installing the latest Kramer firmware version on a VP-727A-BA unit, do the following:

- 1. Connect the RS-232 9-pin D-sub rear panel port according to section 6.2.
- 2. On the rear side, slide the SETUP DIP 1 PROGRAM switch to ON.
- 3. Switch the unit ON.

Note: this sequence is critical – first push the FLASH PROG button and then turn on the unit

² The files indicated in this section are given as an example only. File names are liable to change from time to time



¹ Upgrade should be carried out by skilled technical personnel. Failure to upgrade correctly will result in the malfunction of the machine

7.3 Upgrading Firmware

Follow these steps to upgrade the firmware:

1. Double click the desktop icon: "*Shortcut to FLIP.EXE*". The Splash screen appears as follows:



Figure 8: Splash Screen

2. After a few seconds, the Splash screen is replaced by the "*Atmel – Flip*" window:



Figure 9: Atmel – Flip Window

3. Press the keyboard shortcut key *F2* (or select the "*Select*" command from the *Device* menu, or press the integrated circuit icon in the upper right corner of the window).

The "Device Selection" window appears:

Flash Memory Upgrade

<i>r</i> ice Selecti	on	
Device:	AT89C5115	_

Figure 10: Device Selection Window

4. Click the button next to the name of the device and select from the list: AT89C51RD2:



Figure 11: Selecting the Device Window

5. Click OK and select "Load Hex" from the File menu.



Flash Memory Upgrade

oad HEX Jave HEX As		🔈 🖻 🗶 🛃 🦃
Bead Configuration File F4 Execute Configuration File F5 Eave Configuration As	Buffer Information Size: 63 Kbytes	T89C51RD2
igit Blank Check	Blank: FF Range: 0000 · FBFF Checksum: FB0400 Offset: 0000 No Reset Before Loading	Device Id 1 X Device Id 2 X Device Id 3 X Hardware Byte X 5 Bootloader Ver. XXX
Program	HEX File: Serial Number:	Device BSB X Device SBV X
Verify		C Level 0
☐ Set Special Bytes	<u>AIMEL</u>	C Level 2
Run Clear		Read Set

Figure 12: Loading the Hex

- The Open File window opens. Select the correct HEX file that contains the updated version of the firmware for VP-727A-BA (for example 44M_V1p2.hex) and click Open.
- Press the keyboard shortcut key F3 (or select the "Communication / RS232" command from the Settings menu, or press the keys: Alt SCR). The "RS232" window appears. Change the COM port according to the configuration of your computer and select the 9600 baud rate:



Figure 13: RS-232 Window

8. Click Connect.

In the "*Atmel – Flip*" window, in the *Operations Flow* column, the *Run* button is active, and the name of the chip appears as the name of the third column: *AT89C51RD2*.

Verify that in the *Buffer Information* column, the "*HEX File: VP727A.hex*" appears.

Flash Memory Upgrade

Atmel - Flip 1.8.8 File Buffer Device Settings Help			- 🗆 ×
	la 🕼 📆 🖾		A
Operations Flow	Buffer Information Size: 63 Kbytes Blank: FF Range: 0000 - 1409 Checksum: 08FDF1 Offset: 0000	T89C51RD2 Manufact. Id 58 Denice. Id1 07 Denice. Id2 FC Denice. Id3 FF	
I♥ Blank Check	No Reset Before Loading HEX File: VP7 27 A hex 5.0 Kbytes Serial Number:	Hardware Byte 18 Bootloader Ver. 2.4 Device BSB 00 Device SBV FC Device SSB FF	
Verify	<u>AIMEL</u>	C Level 2	
Run Clear		Read Set	

Figure 14: Atmel – Flip Window (Connected)

9. Click Run.

After each stage of the operation is completed, the check-box for that stage becomes colored green¹.

When the operation is completed, all 4 check-boxes will be colored green and the status bar message: *Memory Verify Pass* appears²:



Figure 15: Atmel – Flip Window (Operation Completed)

- 10. Close the "Atmel Flip" window.
- 11. Disconnect the power on the VP-727A-BA.

² If an error message: "Not Finished" shows, click Run again



¹ See also the blue progress indicator on the status bar

- 12. If required, disconnect the *RS-232* rear panel port on the **VP-727A-BA** unit from the Null-modem adapter.
- 13. On the rear side, slide the SETUP DIP 1 to OFF.
- Connect the power to the VP-727A-BA. Upon initialization, the new VP-727A-BA software version shows in the STATUS 7-segment Display.

8 Technical Specifications

Table 3 includes the technical specifications:

Table 3: Technical Specifications¹ of the VP-727A-BA Balanced Audio Switcher

INPUTS:	8 left and right stereo balanced audio + 4dBm/50k Ω on XLRF connectors
OUTPUTS:	1 Program left and right and 1 Preview left and right stereo balanced audio outputs + 4dBm/50k Ω on XLR M connectors
	1 Headphone output on a 6.5mm jack
	1 Program S/PDIF output on an RCA connector
MAX. OUTPUT LEVEL:	>4.5Vpp
BANDWIDTH (-3dB):	>22kHz
S/N RATIO:	>85dB
CROSSTALK @1kHz	Program: <-88dB
(all hostile):	Preview: <-92dB
	Balanced: <-88dB
	Phones (Preview): <-82dB
	Phones (Program): <-80dB
CONTROLS:	Preview level: <-72dB to 62dB in and out
	Program level: <-73dB to 45dB in and out
	Program bass: 0dB to 27dB @100kHz
	Program treble: 0dB to 11dB @10kHz
	Program balance: -18dB to 0dB
	Program balanced (+/-) level: <-80db to 47dB
0011511010	Phones level (preview and program level): <-80dB to 57dB
COUPLING:	AC, input and output
AUDIO THD + NOISE:	Program: 0.02%; Preview: 0.002%;
	Program phones: 0.034%; Preview phones: 0.018%
AUDIO 2nd HARMONIC:	Preview phones: 0.03%; Program phones: 0.04%; Program: 0.03%; Preview: 0.04%; Program balanced: 0.04%
POWER SOURCE:	100-240 VAC, 50/60 Hz; 10VA
DIMENSIONS:	19-inch (W), 7-inch (D) 2U (H) rack-mountable
WEIGHT:	3.5kg (7.7lbs) approx.
ACCESSORIES:	Power cord, Null modem adapter, Windows®-based Kramer control software ²

¹ Specifications are subject to change without notice

² You can find the latest version on our Web site at http://www.kramerelectronics.com

A protocol for the VP-727A-BA is described below.

For RS-232: A null-modem connection between the PC and the **VP-727A-BA** is required, and data is at 9600 baud (for standalone¹), no parity, 8 data bits, and 1 stop bit.

For RS-485: A differential (2 wire) connection between the **VP-727(xl)** and the **VP-727A-BA** is required (A, B); GND may be connected to the shield if required.

All values shown are hexadecimal.

INSTRUCTION	1 st Byte	2 nd Byte	3 rd Byte	4 th Byte	COMMENT
FACTORY RESET	00	81	81	81	See NOTE 1
RESET	00	80	80	81	
				•	·
INPUT 1 \rightarrow PROGRAM OUT	02	81	81	81	
INPUT 2 \rightarrow PROGRAM OUT	02	82	81	81	
INPUT 3 \rightarrow PROGRAM OUT	02	83	81	81	Select
INPUT 4 \rightarrow PROGRAM OUT	02	84	81	81	Input
INPUT 5 \rightarrow PROGRAM OUT	02	85	81	81	for
INPUT 6 \rightarrow PROGRAM OUT	02	86	81	81	Program
INPUT 7 \rightarrow PROGRAMOUT	02	87	81	81	
INPUT 8 \rightarrow PROGRAM OUT	02	88	81	81	See NOTE 1
READ PROGRAM INPUT #	06	81	80	81	See NOTE 3
				•	·
INPUT 1 \rightarrow PREVIEW OUT	02	81	82	81	
INPUT 2 \rightarrow PREVIEW OUT	02	82	82	81	
INPUT 3 \rightarrow PREVIEW OUT	02	83	82	81	Select
INPUT 4 \rightarrow PREVIEW OUT	02	84	82	81	Input
INPUT 5 \rightarrow PREVIEW OUT	02	85	82	81	For
INPUT 6 \rightarrow PREVIEW OUT	02	86	82	81	Preview
INPUT 7 \rightarrow PREVIEW OUT	02	87	82	81	1
INPUT 8 \rightarrow PREVIEW OUT	02	88	82	81	See NOTE 1
READ PREVIEW INPUT #	06	82	80	81	See NOTE 3

Table 4: Instruction Codes for the VP-727A-BA Protocol

^{1 38,400} baud when operating with the VP-727xl and 115,200 baud when operating with the VP-727



INSTRUCTION	1 st Byte	2 nd Byte	3 rd Byte	4 th Byte	COMMENT	
SET TAKE TRANSITION SPEED	07	81	80	81		
PROGRAM INPUT 1 LEVEL	16	81	80 + Value	81	See NOTE 1	
PROGRAM INPUT 2 LEVEL	16	82	80 + Value	81		
PROGRAM INPUT 3 LEVEL	16	83	80 + Value	81		
PROGRAM INPUT 4 LEVEL	16	84	80 + Value	81		
PROGRAM INPUT 5 LEVEL	16	85	80 + Value	81		
PROGRAM INPUT 6 LEVEL	16	86	80 + Value	81		
PROGRAM INPUT 7 LEVEL	16	87	80 + Value	81		
PROGRAM INPUT 8 LEVEL	16	88	80 + Value	81		
		1		1	•	
READ PROGRAM INPUT 1 LEVEL	19	81	80	81	See NOTE 3	
READ PROGRAM INPUT 2 LEVEL	19	82	80	81		
READ PROGRAM INPUT 3 LEVEL	19	83	80	81		
READ PROGRAM INPUT 4 LEVEL	19	84	80	81		
READ PROGRAM INPUT 5 LEVEL	19	85	80	81		
READ PROGRAM INPUT 6 LEVEL	19	86	80	81		
READ PROGRAM INPUT 7 LEVEL	19	87	80	81		
READ PROGRAM INPUT 8 LEVEL	19	88	80	81		
PREVIEW INPUT 1 LEVEL	16	91	80 + Value	81	See NOTE 1	
PREVIEW INPUT 2 LEVEL	16	92	80 + Value	81		
PREVIEW INPUT 3 LEVEL	16	93	80 + Value	81	1	
PREVIEW INPUT 4 LEVEL	16	94	80 + Value	81	1	
PREVIEW INPUT 5 LEVEL	16	95	80 + Value	81		
PREVIEW INPUT 6 LEVEL	16	96	80 + Value	81	1	

PREVIEW INPUT 7 LEVEL

PREVIEW INPUT 8 LEVEL

16

16

97

98

80 + Value

80 + Value

81

81

INSTRUCTION	1 st Byte	2 nd Byte	3 rd Byte	4 th Byte	COMMENT
READ PREVIEW INPUT 1 LEVEL	19	91	80	81	See NOTE 3
READ PREVIEW INPUT 2 LEVEL	19	92	80	81	
READ PREVIEW INPUT 3 LEVEL	19	93	80	81	
READ PREVIEW INPUT 4 LEVEL	19	94	80	81	
READ PREVIEW INPUT 5 LEVEL	19	95	80	81	
READ PREVIEW INPUT 6 LEVEL	19	96	80	81	
READ PREVIEW INPUT 7 LEVEL	19	97	80	81	
READ PREVIEW INPUT 8 LEVEL	19	98	80	81	
	-	-	-		
PROGRAM OUTPUT LEVEL	16	A1	80 + Value	81	See NOTE 1
PREVIEW OUTPUT LEVEL	16	A2	80 + Value	81	
HEADPHONE OUTPUT LEVEL	16	A3	80 + Value	81	
READ PROGRAM OUTPUT LEVEL	19	A1	80	81	See NOTE 3
READ PREVIEW OUTPUT LEVEL	19	A2	80	81	
READ HEADPHONE OUTPUT LEVEL	19	A3	80	81	
BASS	16	B1	80 + Value	81	See NOTE 1
TREBLE	16	B2	80 + Value	81	
BALANCE	16	B3	80 + Value	81	
PROGRAM INPUT 1 DELAY	16	C1	80 + Value	81	
PROGRAM INPUT 2 DELAY	16	C2	80 + Value	81	
PROGRAM INPUT 3 DELAY	16	C3	80 + Value	81	
PROGRAM INPUT 4 DELAY	16	C4	80 + Value	81	
PROGRAM INPUT 5 DELAY	16	C5	80 + Value	81	
PROGRAM INPUT 6 DELAY	16	C6	80 + Value	81	1
PROGRAM INPUT 7 DELAY	16	C7	80 + Value	81	
PROGRAM INPUT 8 DELAY	16	C8	80 + Value	81	1

INSTRUCTION	1 st Byte	2 nd Byte	3 rd Byte	4 th Byte	COMMENT
READ BASS	19	B1	80	81	See NOTE 3
READ TREBLE	19	B2	80	81	
READ BALANCE	19	B3	80	81	
READ PROGRAM INPUT 1 DELAY	19	C1	80	81	
READ PROGRAM INPUT 2 DELAY	19	C2	80	81	
READ PROGRAM INPUT 3 DELAY	19	C3	80	81	
READ PROGRAM INPUT 4 DELAY	19	C4	80	81	
READ PROGRAM INPUT 5 DELAY	19	C5	80	81	
READ PROGRAM INPUT 6 DELAY	19	C6	80	81	
READ PROGRAM INPUT 7 DELAY	19	C7	80	81	
READ PROGRAM INPUT 8 DELAY	19	C8	80	81	
AFV	08	80	80	81	See NOTE 1
BREAKAWAY	08	80	81	81	
READ AFV / BREAKAWAY STATUS	0B	80	80	81	See NOTE 3
FADE ON	20	80	81	81	See NOTE 1
FADE OFF	20	80	80	81	See NOTE 1
READ FADE STATUS	21	80	80	81	See NOTE 3
TAKE	3A	80	81	81	See NOTE 1
TAKE INSTRUCTION COMPLETE	3A	81	81	81	See NOTE 4
CANCEL TAKE	3A	80	80	81	
IDENTIFY MACHINE	3D	81	80	81	See NOTE 5
IDENTIFY FIRMWARE VERS.	3D	83	80	81	See NOTE 6
STORE SETUP	13	80+SETUP	80	81	See NOTE 1
ERASE STORED SETUP	13	80+SETUP	81	81	
RECALL SETUP	14	80+SETUP	80	81	See NOTE 1
IS SETUP DEFINED?	0D	80+SETUP	80	81	See NOTE 3
LOCK	1E	81	80	81	Lock panel See NOTE 1
UNLOCK	1E	80	80	81	Unlock panel See NOTE 1
READ LOCK STATUS	1F	80	80	81	See NOTE 3

INSTRUCTION	1 st Byte	2 nd Byte	3 rd Byte	4 th Byte	COMMENT
T-BAR POSITION	23	80	80+Value	81	Value 0~112 See NOTE 1
HEADPHONE SOURCE PREVIEW	24	80	80	81	See NOTE 1
HEADPHONE SOURCE PROGRAM	24	80	81	81	
READ HEADPHONE SOURCE	25	80	80	81	See NOTE 3
SEND CHANGED AUDIO PARAMETER INSTRUCTION	3F	80	81	81	See NOTE 7

NOTES on the above table:

NOTE 1:

The reply to these instructions is:

- 1st byte: 0x40 + 1st byte sent

- 2nd byte: Same as 2nd byte sent

- 3rd byte: Same as 3rd byte sent

- 4th byte: Same as 4th byte sent

Example:

	1st byte	2nd byte	3rd byte	4th byte
Send	0x02	0x81	0x81	0x81
Reply	0x42	0x81	0x81	0x81

NOTE 2:

In the case of an error, the reply code will be:

- 1st byte: 0x50

- 2nd, 3rd and 4th byte - don't care

NOTE 3:

The reply to these READ commands is:

- 1^{st} byte: $0x40 + 1^{st}$ byte sent

- 2nd byte: Same as the data that was sent

- 3rd byte: Requested data (as defined by the command which sets this parameter)

- 4th byte: 0x81

Example:

Read Preview Input 3 Level. The reply in this case tells us that the level is 0x17

	1st byte	2nd byte	3rd byte	4th byte
Send	0x19	0x93	0x80	0x81
Reply	0x59	0x93	0x97	0x81

Example:

Read Program Input #. The reply in this case tells us that the Input 4 is connected to the Program output

	1st byte	2nd byte	3rd byte	4th byte
Send	0x06	0x81	0x80	0x81
Reply	0x46	0x81	0x84	0x81

NOTE 4:

In the case where the VP-727A-BA is in "FADE" mode (ie, not "CUT" mode), it will send this command via RS-232 after it has completed the transition.



NOTE 5:

The reply to the Identify Machine command shows the machine name

- 1st byte: 0x7d

- 2nd byte: 0x80 + 0x07 (7 dec)
- 3rd byte: 0x80 + 0x1b (27 dec)
- 4th byte: 0x81

NOTE 6:

The reply to the Identify Firmware command shows the firmware version as

- 1st byte: 0x7d
- 2nd byte: 0x80 + the version number prior to decimal point
- 3rd byte: 0x80 + the version number following the decimal point

- 4th byte: 0x81

For example, for version 3.5, the reply would be 0x7d, 0x83, 0x85, 0x81.

NOTE 7:

If any parameter was changed the VP-727A-BA replies with the changed parameter instruction.

- For example if the Program Source was changed to 3, the machine replies 0x42 0x83 0x81 0x81.
- If there were no changed parameters, the VP-727A-BA replies 0x7f 0x80 0x80 0x81

LIMITED WARRANTY

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

HOWLONGISTHE WARRANTY

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

WHOIS 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:

- 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.
- 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.
- 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.
- 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.

EXCLUSIONOFDAMAGES

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:

- 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:
- 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.



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



CE

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