Kramer Electronics, Ltd.

USER MANUAL

Model:

VP-81

8x1 VGA/XGA Audio Switcher

Contents

Figures

Tables

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 switchers and matrices, we also offer excellent distribution amplifiers, remote controllers, processors, interfaces and computer-related products. Congratulations on purchasing your Kramer **VP-81** *VGA/XGA Audio Switcher*.

This product is ideal for the following typical applications:

- Any professional display system requiring simple 8 way input selection
- Remote monitoring of computer activity in schools and businesses
- Rental/staging applications
- Multimedia and presentation source selection

The package includes the following items:

- **VP-81** VGA/XGA Audio Switcher
- Power cord
- Windows 95/98/NT™ Kramer control software
- This user manual
- Kramer concise product catalog/CD

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

3 Overview

The **VP-81** is an 8x1 switcher for VGA / XGA signals and balanced audio stereo signals that enables the user to route one of up to 8 inputs to one output via HD15F connectors.

In addition, the **VP-81** includes:

- Video bandwidth of 415 MHz that ensures transparent VGA / XGA performance
- Easy-to-connect detachable terminal block connectors on which the audio signals reside
- High standard directly coupled inputs and outputs
- Control via the front panel's INPUT SELECTOR buttons or remotely, by RS-232 serial commands transmitted by a touch screen system, PC, or other serial controller
- Support for remote contact-closure control
- Compatibility with the Kramer **VPM-2** wall mount unit

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 that may adversely influence signal quality
- Positioning your Kramer **VP-81** in a location free from moisture and away from excessive sunlight and dust

4 Your VGA/XGA / Audio Switcher

Figure 1 illustrates the front and rear panels of the **VP-81**. Tables 1 and 2 define the front and rear panels of the **VP-81**, respectively.

Your VGA/XGA / Audio Switcher

Figure 1: VP-81 VGA/XGA / Audio Switcher

Table 1: Front Panel VP-81 VGA/XGA / Audio Switcher Features

#	Feature	Function
1	*Power* Switch	Illuminated switch supplying power to the unit
2	*INPUT SELECTOR* Buttons	Select the input (1 to 8) to switch to the output

Table 2: Rear Panel VP-81 VGA/XGA / Audio Switcher Features

#	Feature	Function
1	*REMOTE* Terminal Block Connectors	Connects to the Remote unit
2	*AUDIO INPUTS* Terminal Block Connectors	Audio inputs
3	*AUDIO OUT* Terminal Block Connector	Audio output
4	*RS-232* DB 9F IN Port	Connects to PC
5	*RS-232* DB 9M OUT Port	Connects to the RS-232 DB 9F IN port of the next unit in the daisy-chain
6	Power Connector with *Fuse*	230 VAC (115V AC, U.S.A.) 50/60 Hz, 12VA max power inlet
7	*PROGRAM*	Dipswitches setup
8	*OUTPUT*	Connects to the VGA/XGA Acceptor
9	*INPUT*	Connects to the VGA/XGA Sources (1 to 8)

4.1 Connecting a VGA/XGA / Audio Switcher

To connect a **VP-81** unit, connect the following[1] to the rear panel:

- The power cord
- A cable for each of the 8 VGA / XGA video INPUTS
- A cable for the VGA / XGA video OUTPUT
- A cable for each of the 8 AUDIO INPUTS
- A cable for the AUDIO OUT

In addition, you can choose to connect the following options:

- A PC (for example, when using the *Kramer Control software*) or other RS-232 controller
- A remote unit via the *REMOTE* terminal block connectors

4.1.1 Connecting a PC

To connect a PC to the **VP-81**, do the following[2]:

- Connect the RS-232 DB9 port on your PC to the RS-232 DB9F rear panel port on the **VP-81** unit, as Figure 2 illustrates (depending on whether the PC has a 9-pin or 25-pin connector)

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1 Switch OFF the power on each device before connecting it to your VP-81. After connecting your VP-81, switch on its power and then switch on the power on each device
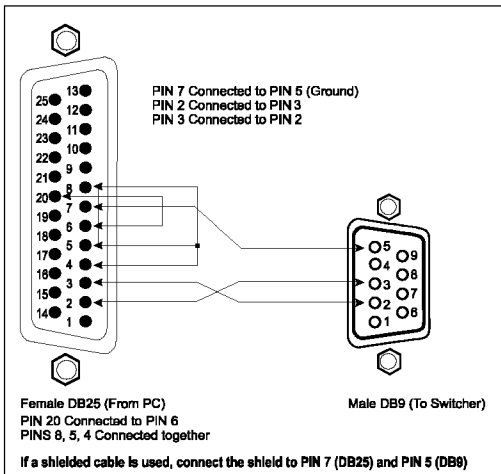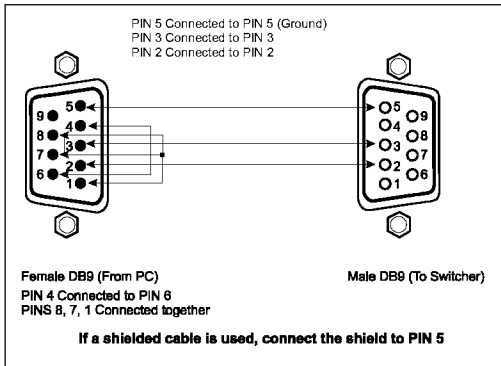
2 Do not use a Null-modem adapter

PIN 5 Connected to PIN 5 (Ground)
PIN 3 Connected to PIN 3
PIN 2 Connected to PIN 2

9 5 4 3 2 1 8 7 6

O5 O9
O4 O8
O3 O7
O2 O6
O1

Female DB9 (From PC)
PIN 4 Connected to PIN 6
PINS 8, 7, 1 Connected together

Male DB9 (To Switcher)

If a shielded cable is used, connect the shield to PIN 5

PIN 7 Connected to PIN 5 (Ground)
PIN 2 Connected to PIN 3
PIN 3 Connected to PIN 2

25 24 23 22 21 20 19 18 17 16 15 14
13 12 11 10 9 8 7 6 5 4 3 2 1

O5 O9
O4 O8
O3 O7
O2 O6
O1

Female DB25 (From PC)
PIN 20 Connected to PIN 6
PINS 8, 5, 4 Connected together

Male DB9 (To Switcher)

If a shielded cable is used, connect the shield to PIN 7 (DB25) and PIN 5 (DB9)

Figure 2: Connecting a PC without using a Null-modem Adapter

4.1.2 Connecting a Remote Unit

Connect a remote unit to the REMOTE[1] terminal block 16 pin connector, as Figure 3 and Figure 4 describe. A remote unit can consist of a:

• Mechanical switcher[2] with a common wire for ground[3]; or
• Security dry contact with a separate wire for ground[4]

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1 Item 1 on the rear panel in Figure 1

2 The remote unit is limited to 8 buttons to correspond with the VP-81, which has 8 front panel INPUT SELECTOR buttons

3 Providing control over a distance of up to hundreds of meters

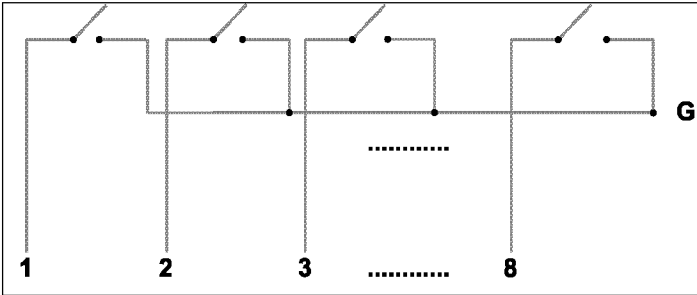4 Connecting the pins to windows or doors, for example

Figure 3: Connecting a Mechanical Switcher Remote Unit
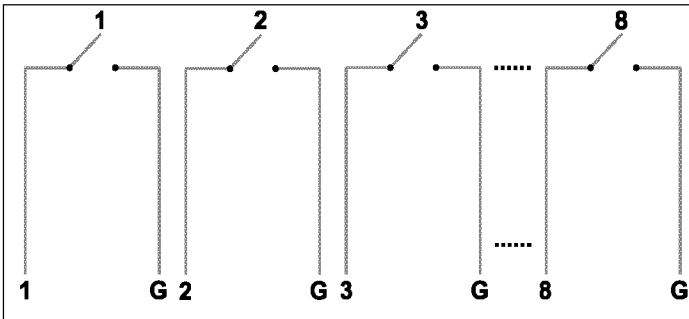
Figure 4: Connecting a Security Dry Contact Remote Unit

4.1.3   Setting the Dipswitches

The **VP-81** unit includes a rear panel *PROGRAM* set of 8 dipswitches[1], as Figure 5 illustrates:

Figure 5: PROGRAM Set of 8 Dipswitches

The *MACHINE* # determines the position of a **VP-81** unit or a set of **VP-81** units in the sequence, specifying which **VP-81** unit is being controlled when

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1 Pull a dipswitch DOWN to set it to 0. Pull a dipswitch UP to set it to 1

several single **VP-81** units connect to one RS-232 port, as Figure 7 illustrates. Set the *MACHINE* # on a **VP-81** unit via dipswitches 1, 2, 3 and 4, according to Table 3:
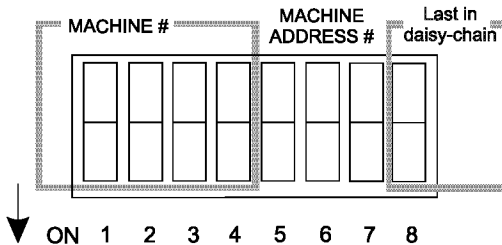
Table 3: MACHINE # Dipswitch Settings

MACHINE #	DIP 1	DIP 2	DIP 3	DIP 4
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	ON	ON	OFF	OFF
4	OFF	OFF	ON	OFF
5	ON	OFF	ON	OFF
6	OFF	ON	ON	OFF
7	ON	ON	ON	OFF
8	OFF	OFF	OFF	ON
9	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON
11	ON	ON	OFF	ON
12	OFF	OFF	ON	ON
13	ON	OFF	ON	ON
14	OFF	ON	ON	ON
15	ON	ON	ON	ON

Section 4.2.1.1 describes the *MACHINE ADDRESS* # and the *Last in Daisy-chain*.

4.1.3.1 Setting the Dipswitches on a Single VP-81 Unit

When using a stand-alone **VP-81** unit, set the *MACHINE* # to 1, as Figure 6 illustrates:

Dipswitch Settings for a Single VP-81 Unit
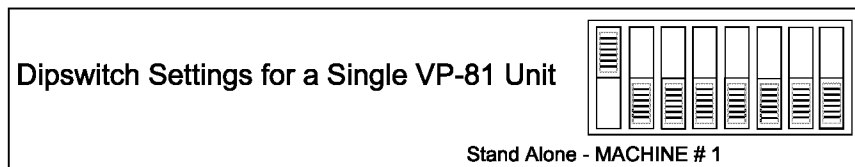
Stand Alone - MACHINE # 1

Figure 6: Dipswitch Settings for a Single VP-81 Unit

Figure 7 illustrates how to set the dipswitches[1] on 3 independent **VP-81** units, which are controlled by one RS-232 port:

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1 Set the MACHINE # on the first VP-81 unit to one, on the second VP-81 unit to 2, on the third VP-81 unit to 3
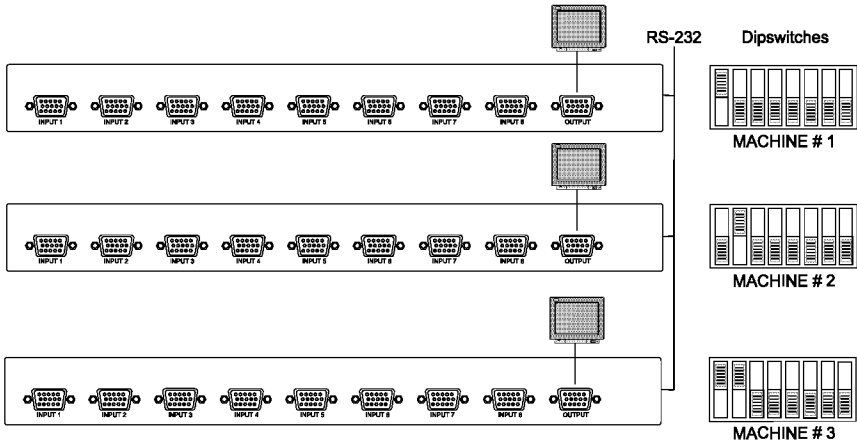
Figure 7: Dipswitch Settings on 3 Single VP-81 Units

4.2 About Cascading VGA/XGA / Audio Switchers

Cascading VGA/XGA / Audio Switchers lets you connect several **VP-81** units to form a combined unit with expanded inputs and/or connect several individual **VP-81** units to the same RS-232 line[1].

For certain applications, you may need more than 8 inputs[2]. Cascading **VP-81** units enables you to expand the number of inputs by looping up to 7 individual **VP-81** units to form a combined VGA/XGA / Audio Switcher with up to 50 inputs.

Be aware that:

- Cascading **VP-81** units can cause VGA/XGA signal quality degradation
- Choosing the quantity of **VP-81** units to cascade depends on your particular VGA/XGA signal quality requirements
- The technical specifications contained in Table 5 are guaranteed for stand-alone units only

4.2.1 Connecting a Set of 3 Cascaded VP-81 Units

To connect 3 looped **VP-81** units with 22 inputs, as Figure 8 illustrates[3], do the following:

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1 A cascade is not restricted to just VP-81 units. You can connect any unit with RS-232 IN / OUT ports, or even a single RS-232 port (but that will end the chain)

2 For example, if you want to connect 50 VGA/XGA audio sources and then be able to switch any one of the m at any time

3 The set of 3 VP-81 units (MACHINE # 1) in Figure 8 are set up in this way

1. Connect the VGA / Audio OUTPUT on the first **VP-81** unit to the VGA / Audio acceptor.

2. Connect the VGA / Audio OUTPUT on the second **VP-81** unit to the VGA / Audio INPUT 8 on the first VP-81 unit.

3. Connect the VGA / Audio OUTPUT on the third **VP-81** unit to the VGA / Audio INPUT 8 on the second VP-81 unit.

4. Connect the VGA / Audio INPUTS 1 to 7 on the first looped **VP-81** unit to the VGA / Audio sources 1 to 7.

5. Connect the VGA / Audio INPUTS 1 to 7 on the second looped **VP-81** unit to the VGA / Audio sources 8 to 14.

6. Connect the VGA / Audio INPUTS 1 to 8 on the third looped **VP-81** unit to the VGA / Audio sources 15 to 22.
   You can switch any one of the 22 inputs to the VGA / Audio acceptor.

4.2.1.1 Setting the Dipswitches on a Set of VP-81 Units

Set the MACHINE # on each **VP-81** unit that is included in a set, as section 4.1.3 describes.

Set the *MACHINE ADDRESS* # on each **VP-81** unit that is included in a set, to define its position in the extended switcher system, specifying which **VP-81** unit within a set is being controlled. Table 4 shows the MACHINE ADDRESS # dipswitch settings:

Table 4: MACHINE ADDRESS # Dipswitch Settings

MACHINE ADDRESS #	DIP 5	DIP 6	DIP 7
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON
5	ON	OFF	ON
6	OFF	ON	ON
7	ON	ON	ON

Set the eighth dipswitch, *Last in Daisy-chain*, to ON (the highest address #), on the last **VP-81** unit in a set of looped **VP-81** units.

Figure 8 illustrates how to set the dipswitches for a set of 3 looped **VP-81** units[1] and 2 single **VP-81** units, controlled by one RS-232 port.

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1 The 3 units in the set "MACHINE # 1" produce a 22x1 switcher

In Figure 8, set:

- The *MACHINE* # on each **VP-81** unit in the set of 3 looped **VP-81** units to MACHINE # 1, on the first single **VP-81** unit to MACHINE # 2 and on the second single **VP-81** unit to MACHINE # 3

- The *MACHINE ADDRESS* # on the first **VP-81** unit in the set of 3 looped **VP-81** units to MACHINE *ADDRESS* # 1, on the second **VP-81** unit in the set of 3 looped **VP-81** units to MACHINE *ADDRESS* # 2, and on the third **VP-81** unit in the set of 3 looped **VP-81** units to MACHINE *ADDRESS* # 3

- The *Last in Daisy-chain* on the third (and last) **VP-81** unit that comprises the set of 3 looped **VP-81** units to ON[1]
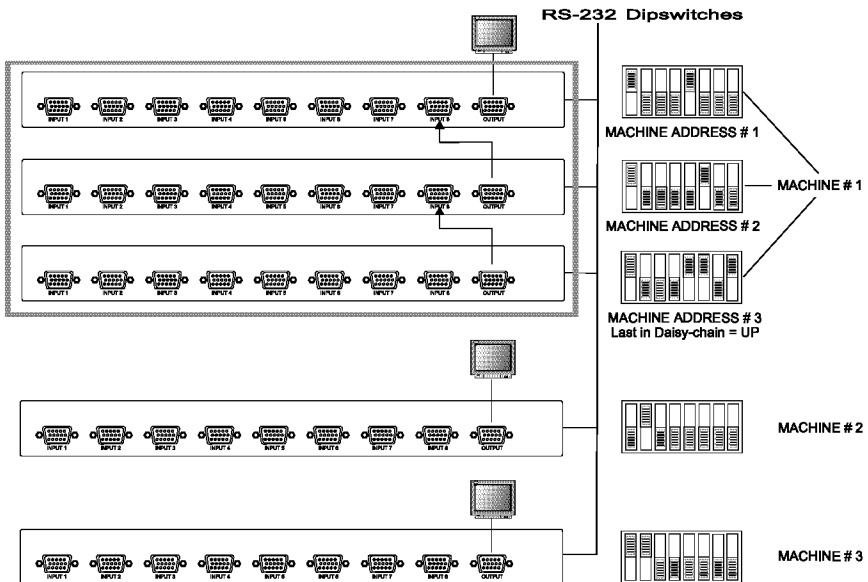

Figure 8: Example showing Dipswitch Settings on a Set of 3 Units and 2 Single Units

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1 Making INPUT 22 available for use

5   Operating Your VGA/XGA / Audio Switcher

To operate your VGA/XGA / Audio Switcher, whether it consists of an individual **VP-81** unit, or of a set of **VP-81** units, use the following:

- The front panel INPUT SELECTOR buttons, as section 5.1 describes
- RS-232 serial commands transmitted by a touch screen system or PC[1]
- A remote unit, as section 4.1.2 describes

5.1 Using the Front Panel INPUT SELECTOR Buttons

Section 5.1.1 describes using the INPUT SELECTOR buttons on an individual **VP-81** unit and section 5.1.2 describes using the INPUT SELECTOR buttons for a set of 3 looped **VP-81** units.

5.1.1   Using INPUT SELECTOR Buttons on an Individual VP-81 Unit

To operate the INPUT SELECTOR buttons on an individual **VP-81** unit:

- Press one of the 8 front panel INPUT SELECTOR buttons on the front panel of the **VP-81** unit

The INPUT SELECTOR button illuminates and switches that input to the output

Any number of up to 7 **VP-81** units can be looped together, as an example section 5.1.2 includes the instructions for looping 3 **VP-81** units:

5.1.2   Using INPUT SELECTOR Buttons on a Set of 3 VP-81 Units

When operating a set of 3 looped **VP-81** units, not all the INPUT SELECTOR buttons on the front panels of the combined **VP-81** units are active. For example, as Figure 9 illustrates, with a combination of 3 switchers, you cannot use all the 8 INPUT SELECTOR buttons on each looped **VP-81** unit. INPUT SELECTOR buttons 8 on the first and second units are inactive. You cannot connect INPUT 8 on the first and second units to an independent source because INPUT 8 on the first unit is connected to the OUTPUT on the second unit and INPUT 8 on the second unit is connected to the OUTPUT on the third unit.

INPUT SELECTOR buttons marked 1 to 7 on the first looped **VP-81** unit operate INPUTS 1 to 7, respectively. INPUT SELECTOR buttons marked 1 to 7 on the second looped **VP-81** unit operate INPUTS 8 to 14, respectively. INPUT SELECTOR buttons marked 1 to 8 on the third looped **VP-81** unit operate INPUTS 15 to 22, respectively.

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1 For instructions on using the Windows 95/98/NT ™ Control Software, refer to the separate user manual (included on the CD-ROM in .pdf format), *Kramer Control Software*
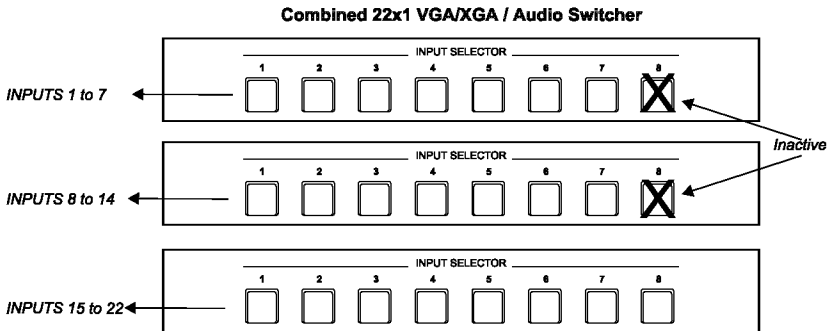
Figure 9: Operating a Combination of 3 Switchers

To operate the INPUT SELECTOR buttons on a combination of 3 **VP-81** units:

- Press an active INPUT SELECTOR button on the front panel of one of the looped **VP-81** units

The active INPUT SELECTOR button illuminates and switches that input to the output

6 Technical Specifications

Table 5 includes the technical specifications[1]:

Table 5: Technical Specifications of the VP-81 VGA/XGA / Audio Switcher

Inputs:	8 analog red, green, blue signals - 0.7 Vpp / 75 Ω, H & V syncs, TTL level on HD15F connectors
	8 balanced audio stereo signals, + 4dBm typ. on detachable terminal blocks
Outputs:	1 analog red, green, blue signals - 0.7 Vpp / 75 Ω, H & V syncs, TTL level on HD15F connectors
	1 balanced audio stereo signal, + 4dBm typ. on detachable terminal blocks
Video Bandwidth:	415 MHz -3dB
Video Crosstalk:	-47 dB@ 5MHz, all hostile
Video S/N Ratio:	73 dB
Diff. Gain:	0.04%
Diff. Phase:	0.02 Deg.
K-Factor:	<0.05%
Audio Bandwidth:	100 kHz -3dB
Control:	8 selector switches; RS-232, 8 remote control points on detachable terminal blocks
Dimensions:	19-inch (W), 7-inch (D) 1U (H) rack-mountable
Power Source:	230 VAC, 50/60 Hz, (115VAC, U.S.A.) 12VA max
Weight:	2.7 kg (6 lbs.) approx
Accessories:	Power cord, Null modem adapter, Windows 95/98/NT™ Kramer control software

1 Technical specifications are guaranteed for stand-alone units, as section 4.2 describes

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 fro m 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.

The list of Kramer distributors appears on our web site:
www.kramerelectronics.com

We welcome your questions, comments and feedback.