

# **Kramer Electronics, Ltd.**



## **USER MANUAL**

**Model:**

**7508**

*CV/YC to SDI Converter*

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Getting Started</b>	<b>1</b>
2.1	Quick Start	2
<b>3</b>	<b>Overview</b>	<b>3</b>
<b>4</b>	<b>Your 7508 CV/YC to SDI Converter</b>	<b>4</b>
<b>5</b>	<b>Using Your 7508 CV/YC to SDI Converter</b>	<b>5</b>
5.1	Connecting a PC	6
5.2	Setting the DIP-Switches	8
<b>6</b>	<b>Technical Specifications</b>	<b>9</b>
<b>7</b>	<b>Communication Protocol</b>	<b>10</b>

## Figures

Figure 1: 7508 CV/YC to SDI Converter	4
Figure 2: Connecting a 7508 CV/YC to SDI Converter	6
Figure 3: Crossed Cable RS-232 Connection	7
Figure 4: Straight Cable RS-232 Connection with a Null Modem Adapter	7
Figure 5: DIP-Switch Settings	8

## Tables

Table 1: 7508 CV/YC to SDI Converter Features	4
Table 2: Setting the DIP-Switches	8
Table 3: Technical specifications of the 7508 CV/YC to SDI Converter	9
Table 4: Structure of the Protocol	10
Table 5: Instruction Set for the 7508	10
Table 6: Input Standard	11

## 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 1,000-plus different models now appear in 11 groups<sup>1</sup> that are clearly defined by function.

Thank you for purchasing your Kramer DigiTOOLS **7508 CV/YC to SDI Converter**, which is ideal for broadcast and production video studios, postproduction and duplication studios, and non-linear editing. The package includes the following items:

- **7508 CV/YC to SDI Converter**
- Power supply
- Null-modem adapter and Windows<sup>®</sup>-based Kramer control software
- This user manual<sup>2</sup>

## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
- Use Kramer high performance high-resolution cables<sup>3</sup>

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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

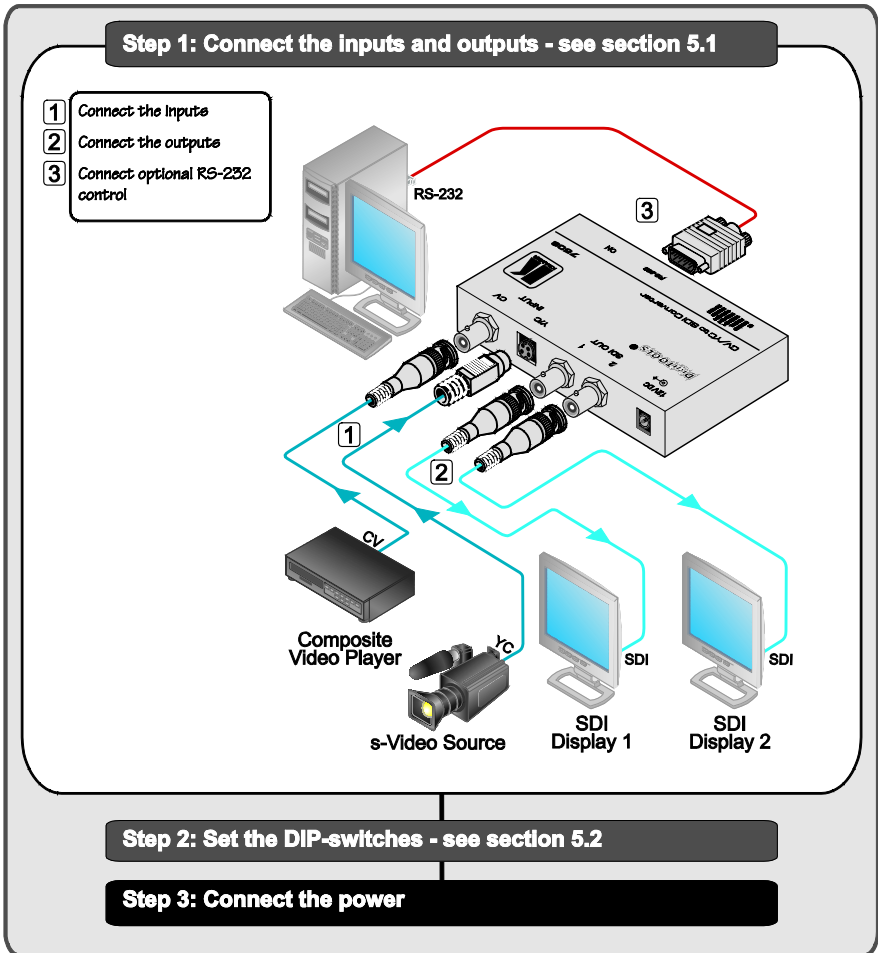
2 Download up-to-date Kramer user manuals from our Web site at <http://www.kramerelectronics.com>

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



## 2.1 Quick Start

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



### 3 Overview


The high quality Kramer DigiTOOLS **7508 CV/YC to SDI Converter** is a multi-standard converter of analog video (composite and s-Video) to SMPTE-259M serial digital video (SDI). Many professional video units on the market today, such as Betacam decks and DVD players have high quality analog outputs, and the **7508** is ideal for preserving the quality, and minimizing the artifacts, when converting to the digital domain.

In particular, the **7508**:

- Converts the SDI on 2 buffered and reclocked SDI outputs
- Automatically detects the input standard (50/60Hz), generating the appropriate output
- Uses true 10-bit digitizing, making it ideal for the most demanding applications
- Has an RS-232 port and can be controlled via a user-friendly Windows®-based program that can modify video parameters such as contrast, saturation and hue, which may be stored in non-volatile memory

To achieve the best performance:

- Use only good quality connection cables<sup>1</sup> to avoid 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 **7508** away from moisture, excessive sunlight and dust

	<b>Caution:</b> No operator serviceable parts inside unit
	<b>Warning:</b> Use only the Kramer Electronics input power wall adapter that is provided with the unit
	<b>Warning:</b> Disconnect power and unplug unit from wall before installing or removing the device or servicing unit

<sup>1</sup> Available from Kramer Electronics on our Web site at <http://www.kramerelectronics.com>

## 4 Your 7508 CV/YC to SDI Converter

[Figure 1](#) and [Table 1](#) define the **7508 CV/YC to SDI Converter**:

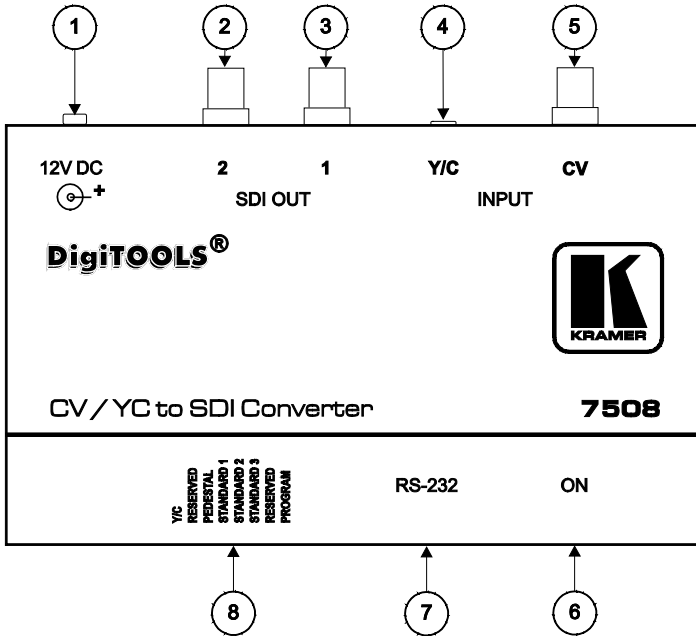


Figure 1: 7508 CV/YC to SDI Converter

Table 1: 7508 CV/YC to SDI Converter Features

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit
2	SDI OUT 2 BNC Connector	Connects to the SDI acceptor 2
3	SDI OUT 1 BNC Connector	Connects to the SDI acceptor 1
4	Y/C INPUT 4-pin Connector	Connects to the s-Video source
5	CV INPUT BNC Connector	Connects to the composite video source
6	ON LED	Illuminates when receiving power
7	RS-232 Port	Connects to the PC or the remote controller
8	Dipswitches	DIP-switches for setup of the unit

## 5 Using Your 7508 CV/YC to SDI Converter

You can use your **7508 CV/YC to SDI Converter** to convert professional quality composite video or s-Video (as the example in [Figure 2](#) illustrates) to one or two SDI video outputs.

To convert composite video or s-Video to up to 2 SDI video outputs, do the following<sup>1</sup>:

1. Connect a composite video source (for example, a VCR) to the CV BNC INPUT connector.
2. Connect an s-Video source (for example, a camera) to the Y/C 4-pin INPUT connector.
3. Connect both SDI outputs to SDI acceptors as follows (when only one SDI output is required, use either of the SDI outputs of the **7508**, and leave the other SDI output unconnected):
  - Connect the SDI OUT 1 BNC connector to an SDI acceptor (for example, an SDI monitor)
  - Connect the SDI OUT 2 BNC connector to the second SDI acceptor (for example, an SDI monitor)
4. Set the DIP-switches, as section [5.2](#) describes
5. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity.  
The composite video<sup>2</sup> or s-Video<sup>3</sup> signal converts to SDI at both SDI OUT 1 and SDI OUT 2.
6. Connect a PC (if required) to the RS-232 port (see section [5.1](#)).

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1 Switch OFF the power on each device before connecting it to your 7508. After connecting your 7508, switch on its power and then switch on the power on each device

2 To choose the CV input, set the Y/C (DIP 1) OFF

3 To choose the Y/C input, set the Y/C (DIP 1) ON

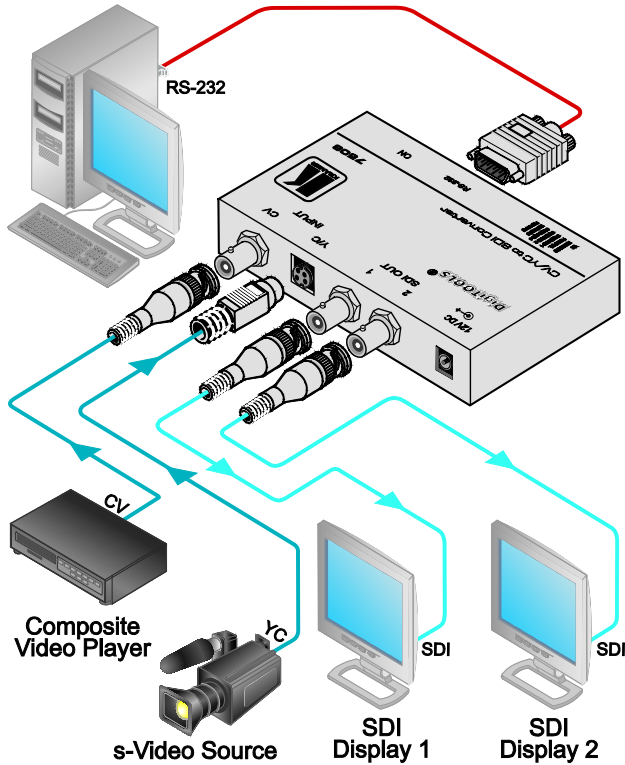


Figure 2: Connecting a 7508 CV/YC to SDI Converter

## 5.1 Connecting a PC

You can connect to the unit via a crossed RS-232 connection, using for example, a PC. A crossed cable or null-modem is required as shown in method A and B respectively. If a shielded cable is used, connect the shield to pin 5.

Method A (Figure 3)—Connect the RS-232 9-pin D-sub port on the unit via a crossed cable (pin 2 to pin 3, pin 3 to pin 2, and pin 5 to pin 5) to the RS-232 9-pin D-sub port on the PC.

Note: There is no need to connect any other pins.



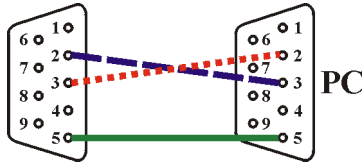


Figure 3: Crossed Cable RS-232 Connection

Hardware flow control is not required for this unit. In the rare case where a controller requires hardware flow control, short pin 1 to 7 and 8, and pin 4 to 6 on the controller side.

**Method B** ([Figure 4](#))—Connect the RS-232 9-pin D-sub port on the unit via a straight (flat) cable to the null-modem adapter, and connect the null-modem adapter to the RS-232 9-pin D-sub port on the PC. The straight cable usually contains all nine wires for a full connection of the D-sub connector. Because the null-modem adapter (which already includes the flow control jumpering described in Method A above) only requires pins 2, 3 and 5 to be connected, you are free to decide whether to connect only these 3 pins or all 9 pins.

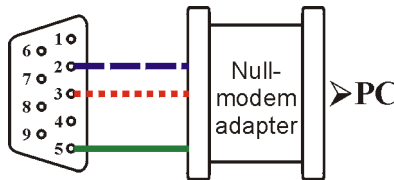


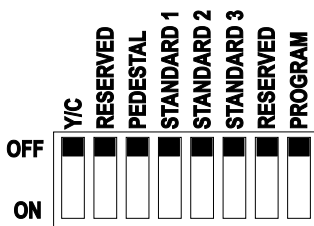
Figure 4: Straight Cable RS-232 Connection with a Null Modem Adapter

## 5.2 Setting the DIP-Switches

Configure the **7508** unit by setting the DIP-switches, as shown in [Table 2](#) and [Figure 5](#).

*Table 2: Setting the DIP-Switches*

DIP-Switch		Set as Follows:
1	Y/C	ON for Y/C source; OFF for CV source
2	RESERVED	OFF
3	PEDESTAL <sup>1</sup>	ON for pedestal (7.5 IRE offset selection for NTSC); OFF for no pedestal
		AUTO   NTSC   PAL   PAL-M   PAL-N   NTSC-4   SECAM   AUTO
4	STANDARD 1	OFF   ON   OFF   ON   OFF   ON   OFF   ON
5	STANDARD 2	OFF   OFF   ON   ON   OFF   OFF   ON   ON
6	STANDARD 3	OFF   OFF   OFF   OFF   ON   ON   ON   ON
7	RESERVED	OFF
8	PROGRAM	ON for upgrading firmware; OFF for normal use



*Figure 5: DIP-Switch Settings*

<sup>1</sup> NTSC offsets the black level within the active video signal by 7.5 IRE when selected

## 6 Technical Specifications

[Table 3](#) includes the technical specifications:

*Table 3: Technical specifications<sup>1</sup> of the 7508 CV/YC to SDI Converter*

INPUT:	1 composite video, 1Vpp/75Ω on a BNC connector; 1 s-Video, 1Vpp, 0.3Vpp/75Ω on a 4-pin connector
OUTPUT:	2 SDI SMPTE-259M, ITU-R BT.601 on BNC connectors
DIGITAL RESOLUTION:	10 bits
BANDWIDTH:	5MHz (-0.2dB)
S/N RATIO:	57dB
K-FACTOR:	<0.2%
DIFFERENTIAL PHASE:	1Deg
DIFFERENTIAL GAIN:	1%
LUMA NON-LINEARITY:	1%
CHROMA/LUMA DELAY:	<15ns
CONTROL:	Brightness, contrast, hue, saturation, sharpness via RS-232
POWER SOURCE:	12V DC, 210mA
DIMENSIONS:	12cm x 7.5cm x 2.5cm (4.7" x 2.95" x 0.98") W, D, H
WEIGHT:	0.3kg (0.66lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-3T 19" rack adapter

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



## 7 Communication Protocol

RS-232 communication with the **7508** complies with the following protocol. The protocol uses 4 bytes of information, and data is at 9600 baud, with no parity, 8 data bits and 1 stop bit.

*Table 4: Structure of the Protocol*

MSB		INSTRUCTION						LSB	
0	TO PC	I5	I4	I3	I2	I1	I0		
7	6	5	4	3	2	1	0		
1st byte									
		DATA							
1	D6	D5	D4	D3	D2	D1	D0		
7	6	5	4	3	2	1	0		
2nd byte									
		EXTENDED DATA							
1	E6	E5	E4	E3	E2	E1	E0		
7	6	5	4	3	2	1	0		
3rd byte									
		MSB's						ADDR	
1	E7	D7	0	0	1	1	0		
7	6	5	4	3	2	1	0		
4th byte <sup>1</sup>									

Note that the MSB's of the DATA (D7) and the EXTENDED DATA (E7) are in the fourth byte.

Terminology:

- TO PC is the "DESTINATION BIT"
- I4..I0 is the "INSTRUCTION"
- D7..D0 is the "DATA"
- E7..E0 is the "EXTENDED DATA"
- A0 is the "LSB of the MACHINE ADDRESS"

The destination bit, TO PC, is 0 when sending from the PC to the machine, or 1 when sending from the machine to the PC.

*Table 5: Instruction Set for the 7508*

#	INSTRUCTION	I5	I4	I3	I2	I1	I0
0	Reset	0	0	0	0	0	0
1	Read video standard	0	0	0	0	0	1
3	Read back-panel DIP-switch 1 (video format CV/YC)	0	0	0	0	1	1
10	Write EEPROM data – low address	0	0	1	0	1	0
11	Read EEPROM data – low address	0	0	1	0	1	1
12	Write I <sup>2</sup> C	0	0	1	1	0	0
13	Read I <sup>2</sup> C	0	0	1	1	0	1
16	Error	0	1	0	0	0	0
57	Enable "Power-down save"	1	1	1	0	0	1
61	Identify machine	1	1	1	1	0	1

<sup>1</sup> Note that the MSB's of the DATA (D7) and the EXTENDED DATA (E7) are in the fourth byte

**DESCRIPTION OF INSTRUCTIONS**

**INSTRUCTION 0 – RESET**

DATA=0: initialize the machine.

When the machine is initialized, it will send the RESET code (DATA = 0). If the machine receives this code, it will reset to its "power-up" state.

DATA=1: configure the machine to its factory default state.

When the machine receives this code, all programmable parameters will be reset to their factory-default values.

EXTENDED DATA - set as 0.

**INSTRUCTION 1 – READ INPUT STANDARD**

For sending to machine, set DATA = EXTENDED DATA = 0.

When replying:- DATA = INPUT STANDARD; EXTENDED DATA = 0. The PC sends this instruction to the machine. The machine replies by sending back the INPUT STANDARD, defined as per the table below:

*Table 6: Input Standard*

STANDARD	E2	E1	E0
NTSC (J, M)	0	0	0
PAL (B, G, H, I, N)	0	0	1
PAL-M	0	1	0
Combination PAL-N	0	1	1
NTSC 4.43	1	0	0

**INSTRUCTION 3 – READ BACK-PANEL DIP-SWITCH 1 (VIDEO FORMAT) (read format)**

When sending to machine:- DATA, EXTENDED DATA - set as 0.

When replying:- EXTENDED DATA = back-panel DIP switch 1 (0=CV, 1=Y/C.); DATA = 0. The PC sends this instruction to the machine. The machine replies by sending back a value relating to the current video format.

**INSTRUCTION 10 – WRITE EEPROM DATA**

DATA = EEPROM sub-address; EXTENDED DATA = data to be written to this sub-address. The PC sends data directly to the EEPROM. The EEPROM stores this new value, and replies by sending the same data back to the PC. CAUTION – this function was designated for development and testing purposes. Improper use of this function may cause erratic behaviour of the machine.

**INSTRUCTION 11 – READ EEPROM DATA**

For sending to machine, DATA = EEPROM sub-address.

When replying:- DATA = EEPROM sub-address; EXTENDED DATA = requested data.

The PC sends this instruction to the machine. The machine replies by sending back the data of this sub-address.

**INSTRUCTION 12 – WRITE PC**

DATA = PC sub-address; EXTENDED DATA = data to be written to this sub-address.

The PC sends PC data (to the PC address which was last accessed via INSTRUCTION 13). The machine replies by sending the same data back to the PC.

CAUTION – this function was designated for development and testing purposes. Improper use of this function may cause erratic behavior of the machine.

**INSTRUCTION 13 – READ PC**

For sending to machine, DATA = PC address; EXTENDED DATA = sub-address.

When replying:- DATA = sub-address; EXTENDED DATA = data read.

The PC sends this instruction to the machine. The machine replies by sending back the data of this address and sub-address.

**INSTRUCTION 16 – ERROR**

If the machine receives an invalid instruction, it replies by sending this error code.

**INSTRUCTION 57 – ENABLE "POWER-DOWN SAVE"**

DATA = 0 disables power-down saving; DATA = 1 enables saving. EXTENDED DATA - set to 0.

The PC sends this instruction to the machine. The power-down option is enabled or disabled according to the value of DATA.

If the power-down option is enabled, then the machine will "remember" its state before being turned off, and revert to this state when turned on again.

Note that whenever the machine is turned on, the power-down save option is enabled.

**INSTRUCTION 61 – IDENTIFY MACHINE**

For sending, DATA = 1 to request machine name; DATA = 3 to request software version number. EXTENDED DATA - set to 0.

The PC sends this instruction to the machine. The machine replies as follows:

if the machine name is requested, the machine replies with DATA = 75 (hex), and EXTENDED DATA = 01 (hex).

if the software version is requested, the machine replies with DATA as the version number before the decimal point, and EXTENDED DATA is the value following the decimal point. For example, for version 3.4, the machine replies with DATA = 03 (hex), and EXTENDED DATA = 04 (hex).



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## LIMITED WARRANTY

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

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for 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](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: Residential, commercial and light industry environment".
- CFR-47: FCC\* Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B Unintentional radiators"

### CAUTION!

- ⊗ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ⊗ Use the supplied DC power supply to feed power to the machine.
- ⊗ Please use recommended interconnection cables to connect the machine to other components.

\* FCC and CE approved using STP cable (for twisted pair products)



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

**Updates to this user manual may be found at**

**<http://www.kramerelectronics.com/manuals.html>.**

**We welcome your questions, comments and feedback.**



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**Kramer Electronics, Ltd.**

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