



KRAMER ELECTRONICS LTD.

USER MANUAL

MODEL:

FC-31 xl
UXGA to DVI Converter

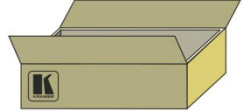
P/N: 2900-000557 Rev 4

FC-31xl Quick Start Guide

This page guides you through a basic installation and first-time use of your **F-31xl**. For more detailed information, see the **F-31xl** user manual. You can download the latest manual at <http://www.kramerelectronics.com>.

Step 1: Check what's in the box

- FC-31xl** UXGA to DVI Converter
- 1 Quick Start sheet
- 1 Power supply (12V DC)
- 4 Rubber feet



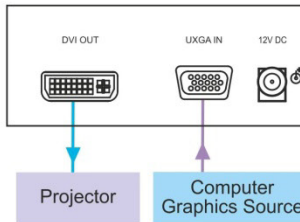
Save the original box and packaging materials in case you need to return your FC-31xl for service.

Step 2: Install the FC-31xl

Attach the rubber feet and place on a table or mount the machine in a rack (using an optional RK-1 rack mount).

Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **FC-31xl**.



Always use Kramer high-performance cables for connecting AV equipment to the **FC-31xl**.

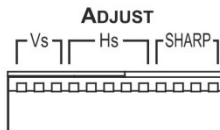
Step 4: Connect the power

Connect the 12V DC power adapter to the **FC-31xl** and plug the adapter into the mains electricity.



Step 5: Operate the FC-31xl

Adjust the horizontal (HS), vertical (Vs) and sharpness settings using the DIP-switches.



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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 video, audio, presentation, and broadcasting professionals 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 that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Routers; 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 and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **FC-31xI UXGA to DVI Converter**, which is ideal for the following typical applications:

- Home theater, presentation and multimedia applications
- Rental and staging

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



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Do not secure the cables in tight bundles or roll the slack into tight coils
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **FC-31xI** away from moisture, excessive sunlight and dust



Caution: No operator serviceable parts inside the unit

Warning: Use only the Kramer Electronics input power wall adapter that is provided with the unit

Warning: Disconnect the power and unplug the unit from the wall before installing

3 Overview

The Kramer **FC-31xl** is a high-performance format converter for computer graphics signals with resolutions up to and including WUXGA. The unit converts a computer graphics input to a DVI-D output.

The following table lists the resolutions supported by the **FC-31xl**.

Resolution	Frequency [Hz]	Resolution	Frequency [Hz]
640x480	60, 72, 75, 85	1280x1024	60, 75, 85
720x400	70, 85	1360x768	60
800x600	56, 60, 72, 75, 85	1400x1050	60 (RB), 75
848x480	60	1440x900	60
1024x768	60, 72, 75, 85	1440x1050	60
1152x864	75	1600x1200	60
1280x768	60 (RB - reduced blanking), 75, 85	1680x1050	60
1280x800	60	1920x1080	60
1280x960	60, 85	1920x1200	60 (RB)

In particular, the **FC-31xl**:

- Includes DIP-switches that let you adjust the horizontal position, the vertical position, and/or the sharpness of the image
- Is 12V DC fed

3.1 Defining the FC-31xl UXGA to DVI Converter

This section defines the **FC-31xl**.

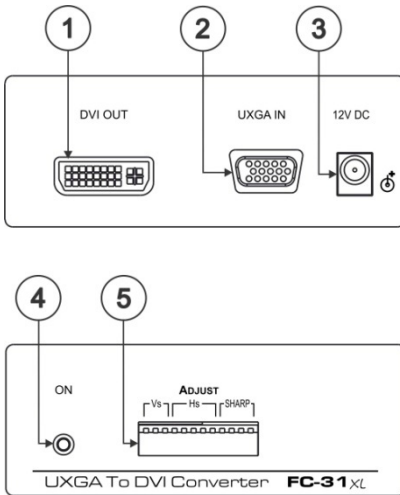
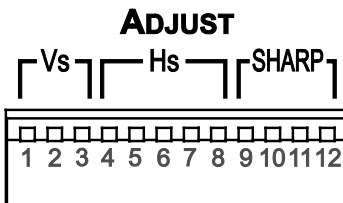


Figure 1: FC-31xl UXGA to DVI Converter

#	Feature	Function
1	<i>DVI OUT</i> Connector	Connects to the DVI acceptor
2	<i>UXGA IN</i> 15-pin HD Connector	Connects to the computer graphics source
3	<i>12V DC</i>	+12V DC connector for powering the unit
4	<i>ON</i> LED	Illuminates when receiving power
5	<i>ADJUST</i> DIP-switches	Set to adjust the vertical and/or horizontal position on the screen, and/or the sharpness of the picture (see Section 3.2)

3.2 DIP-Switch Settings

[Figure 2](#) defines the DIP-switches.



DIP-Switches	Set to adjust the:
1 to 3	(Vs) Vertical position on the screen
4 to 8	(Hs) Horizontal position on the screen
9 to 12	(SHARP) Sharpness of the picture

Figure 2: DIP-switch Definitions

To adjust the vertical position (Vs) of the image, set the DIP-switches as required, according to the next table.

In this state:	1	2	3
Shift Down (4 steps)	OFF	OFF	OFF
Shift Down (3 steps)	ON	OFF	OFF
Shift Down (2 steps)	OFF	ON	OFF
Shift Down (1 step)	ON	ON	OFF
No shift	OFF	OFF	ON
Shift Up (1 step)	ON	OFF	ON
Shift Up (2 steps)	OFF	ON	ON
Shift Up (3 steps)	ON	ON	ON

To adjust the horizontal position (Hs) of the image, set the DIP-switches as required, according to the next table.

In this state:	4	5	6	7	8
Shift Left (16 steps)	OFF	OFF	OFF	OFF	OFF
Shift Left (15 steps)	ON	OFF	OFF	OFF	OFF
Shift Left (14 steps)	OFF	ON	OFF	OFF	OFF
Shift Left (13 steps)	ON	ON	OFF	OFF	OFF
Shift Left (12 steps)	OFF	OFF	ON	OFF	OFF
Shift Left (11 steps)	ON	OFF	ON	OFF	OFF
Shift Left (10 steps)	OFF	ON	ON	OFF	OFF
Shift Left (9 steps)	ON	ON	ON	OFF	OFF
Shift Left (8 steps)	OFF	OFF	OFF	ON	OFF
Shift Left (7 steps)	ON	OFF	OFF	ON	OFF
Shift Left (6 steps)	OFF	ON	OFF	ON	OFF
Shift Left (5 steps)	ON	ON	OFF	ON	OFF
Shift Left (4 steps)	OFF	OFF	ON	ON	OFF
Shift Left (3 steps)	ON	OFF	ON	ON	OFF
Shift Left (2 steps)	OFF	ON	ON	ON	OFF
Shift Left (1 step)	ON	ON	ON	ON	OFF

In this state:	4	5	6	7	8
No Shift	OFF	OFF	OFF	OFF	ON
Shift Right (1 step)	ON	OFF	OFF	OFF	ON
Shift Right (2 steps)	OFF	ON	OFF	OFF	ON
Shift Right (3 steps)	ON	ON	OFF	OFF	ON
Shift Right (4 steps)	OFF	OFF	ON	OFF	ON
Shift Right (5 steps)	ON	OFF	ON	OFF	ON
Shift Right (6 steps)	OFF	ON	ON	OFF	ON
Shift Right (7 steps)	ON	ON	ON	OFF	ON
Shift Right (8 steps)	OFF	OFF	OFF	ON	ON
Shift Right (9 steps)	ON	OFF	OFF	ON	ON
Shift Right (10 steps)	OFF	ON	OFF	ON	ON
Shift Right (11 steps)	ON	ON	OFF	ON	ON
Shift Right (12 steps)	OFF	OFF	ON	ON	ON
Shift Right (13 steps)	ON	OFF	ON	ON	ON
Shift Right (14 steps)	OFF	ON	ON	ON	ON
Shift Right (15 steps)	ON	ON	ON	ON	ON

The SHARPNESS DIP-switch setting controls the phase of the sampling clock, as defined in the next table.

9	11	10	12
OFF	OFF	OFF	OFF
ON	OFF	OFF	OFF
OFF	ON	OFF	OFF
ON	ON	OFF	OFF
OFF	OFF	ON	OFF
ON	OFF	ON	OFF
OFF	ON	ON	OFF
ON	ON	ON	OFF
OFF	OFF	OFF	ON
ON	OFF	OFF	ON
OFF	ON	OFF	ON
ON	ON	OFF	ON
OFF	OFF	ON	ON
ON	OFF	ON	ON
OFF	ON	ON	ON
ON	ON	ON	ON

4 Connecting the FC-31xl



Always switch off the power to each device before connecting it to your **FC-31xl**. After connecting your **FC-31xl**, connect its power and then switch on the power to each device.

To connect your **FC-31xl UXGA to DVI Converter**, as the example in [Figure 3](#) illustrates, do the following:

1. Connect a computer graphics source (for example, a computer) to the UXGA IN connector.
2. Connect the DVI OUT connector to a DVI projector.
3. Connect the 12V DC power adapter (wall transformer) to the 12V DC socket and connect the transformer to the mains electricity (not shown in [Figure 3](#)).

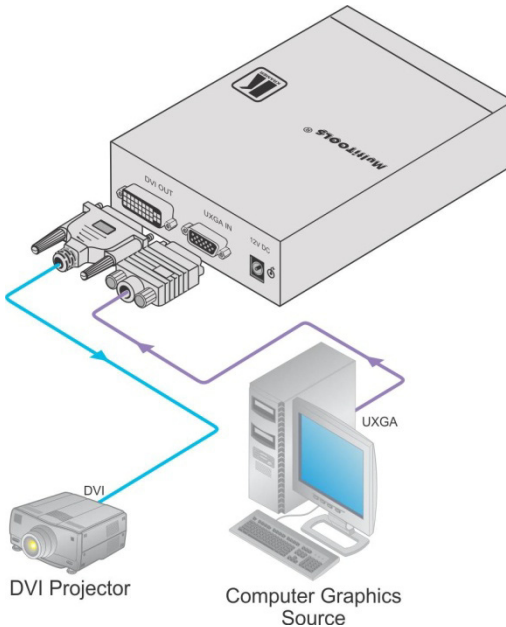


Figure 3: Connecting the FC-31xl UXGA to DVI Converter

5 Technical Specifications

INPUT:	1 UXGA on a 15-pin HD connector
OUTPUT:	1 DVI (On a DVI-I connector. Note that only a DVI-D signal is available on the DVI connector), 1.2Vpp on a DVI Molex 24-pin female connector; DDC signal 5Vpp (TTL)
SUPPORTED RESOLUTIONS:	640x480 @60Hz/72Hz/75Hz/85Hz; 720x400 @70Hz/85Hz; 800x600 @56Hz/60Hz/72Hz/75Hz/85Hz; 848x480 @60Hz; 1024x768 @60Hz/72Hz/75Hz/85Hz; 1152x864 @75Hz; 1280x768 @60Hz (RB)/75Hz/85Hz; 1280x800 @60Hz; 1280x960 @60Hz/85Hz; 1280x1024 @60Hz/75Hz/85Hz; 1360x768 @60Hz; 1400x1050 @60Hz(RB)/75Hz; 1440x900 @60Hz; 1440x1050 @60Hz; 1600x1200 @60Hz; 1680x1050 @60Hz; 1920x1080 @60Hz; 1920x1200 @60Hz(RB)
DVI BANDWIDTH:	1.65GHz
CONTROLS:	DIP-switches
COUPLING:	DC
POWER SOURCE:	12V, 180mA
OPERATING TEMPERATURE:	0° to +55°C (32° to 131°F)
STORAGE TEMPERATURE:	-45° to +72°C (-49° to 162°F)
HUMIDITY:	10% to 90%, RHL non-condensing
DIMENSIONS:	10.7cm x 4.0cm x 15.9cm (4.20" x 1.59" x 6.26") W, D, H
WEIGHT:	0.15kg. (0.55lbs.) approx.
ACCESSORIES:	Power supply
OPTIONS:	RK-1 19" rack adapter.
Specifications are subject to change without notice at http://www.kramerelectronics.com	

6 EDID Factory Default Data

The **FC-31xl** is shipped with a fixed, factory default EDID as shown in this section.

Time: 8:56:25 AM
Date: 07 December, 2010
EDID Manager Version: 1.0.0.14

Block 0 (EDID Base Block), Bytes 0 - 127, 128 BYTES OF EDID CODE

```
0 1 2 3 4 5 6 7 8 9
000 | 00 FF FF FF FF FF FF 00 2E 4D
010 | 02 00 9C 03 00 00 27 14 01 03
020 | 78 58 32 78 EF EE 91 A3 54 4C
030 | 99 26 0F 50 54 A5 6F 00 D1 C0
040 | B3 00 95 00 90 40 A9 40 81 00
050 | 81 40 81 C0 02 3A 80 18 71 38
060 | 2D 40 58 2C 45 00 12 2C 21 00
070 | 00 1E 66 21 50 B0 51 00 1B 30
080 | 40 70 36 00 12 2C 21 00 00 1E
090 | 28 3C 80 A0 70 B0 23 40 30 20
100 | 36 00 12 2C 21 00 00 1E 48 3F
110 | 40 30 62 B0 32 40 40 C0 13 00
120 | 12 2C 21 00 00 1E 00 1A
```

(8-9) ID Manufacture Name : KRM
(10-11) ID Product Code : 0002
(12-15) ID Serial Number :

(16) Week of Manufacture : 39
(17) Year of Manufacture : 2010

(18) EDID Version Number : 1
(19) EDID Revision Number: 3

(20) Video Input Definition: Analog
0.700, 0.000 (0.700 V p-p)
Separate Syncs

(21) Maximum Horizontal Image Size: 88 cm
(22) Maximum Vertical Image Size: 50 cm
(23) Display Gamma : 2.20

(24) Power Management and Supported Feature(s):
Standby, Suspend, Active Off/Very Low Power, RGB Color, sRGB, Preferred Timing
Mode, Default GTF Supported

(25-34) Color Characteristics
Red Chromaticity: Rx = 0.636 Ry = 0.330
Green Chromaticity: Gx = 0.300 Gy = 0.596
Blue Chromaticity: Bx = 0.150 By = 0.056
Default White Point: Wx = 0.312 Wy = 0.329

(35) Established Timings I
720 x 400 @ 70Hz (IBM, VGA)
640 x 480 @ 60Hz (IBM, VGA)
640 x 480 @ 75Hz (VESA)
800 x 600 @ 60Hz (VESA)

(36) Established Timings II
800 x 600 @ 75Hz (VESA)
832 x 624 @ 75Hz (Apple, Mac II)
1024 x 768 @ 60Hz (VESA)
1024 x 768 @ 70Hz(VESA)
1024 x 768 @ 75Hz (VESA)
1280 x 1024 @ 75Hz (VESA)

(37) Manufacturer's Timings (Not Used)

(38-53) Standard Timings
1920x1080 @ 60 Hz (16:9 Aspect Ratio)
1680x1050 @ 60 Hz (16:10 Aspect Ratio)
1440x900 @ 60 Hz (16:10 Aspect Ratio)
1400x1050 @ 60 Hz (4:3 Aspect Ratio)
1600x1200 @ 60 Hz (4:3 Aspect Ratio)

1280x800 @ 60 Hz (16:10 Aspect Ratio)
1280x960 @ 60 Hz (4:3 Aspect Ratio)
1280x720 @ 60 Hz (16:9 Aspect Ratio)

- (54-71) Detailed Descriptor #1: Preferred Detailed Timing (1920x1080 @ 60Hz)
Pixel Clock : 148.5 MHz
Horizontal Image Size: 530 mm
Vertical Image Size: 300 mm
Refresh Mode : Non-interlaced
Normal Display, No Stereo
- Horizontal:
Active Time:1920 Pixels
Blanking Time: 280 Pixels
Sync Offset: 88 Pixels
Sync Pulse Width: 44 Pixels
Border: 0 Pixels
Frequency: 67 kHz
- Vertical:
Active Time: 1080 Lines
Blanking Time: 45 Lines
Sync Offset: 4 Lines
Sync Pulse Width: 5 Lines
Border: 0 Lines
- Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
Modeline: "1920x1080" 148.500 1920 2008 2052 2200 1080 1084 1089
1125 +hsync +vsync
- (72-89) Detailed Descriptor #2: Detailed Timing (1360x768 @ 60Hz)
Pixel Clock: 85.5 MHz
Horizontal Image Size: 530 mm
Vertical Image Size: 300 mm
Refresh Mode: Non-interlaced
Normal Display, No Stereo
- Horizontal:
Active Time: 1360 Pixels
Blanking Time: 432 Pixels
Sync Offset: 64 Pixels
Sync Pulse Width: 112 Pixels
Border: 0 Pixels
Frequency: 47 kHz
- Vertical:
Active Time: 768 Lines
Blanking Time: 27 Lines
Sync Offset: 3 Lines
Sync Pulse Width: 6 Lines
Border: 0 Lines
- Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
Modeline: "1360x768" 85.500 1360 1424 1536 1792 768 771 777 795
+hsync +vsync
- (90-107) Detailed Descriptor #3: Detailed Timing (1920x1200 @ 60Hz)
Pixel Clock: 154 MHz
Horizontal Image Size: 530 mm
Vertical Image Size: 300 mm
Refresh Mode: Non-interlaced
Normal Display, No Stereo
- Horizontal:
Active Time: 1920 Pixels
Blanking Time: 160 Pixels
Sync Offset: 48 Pixels
Sync Pulse Width: 32 Pixels
Border: 0 Pixels
Frequency: 74 kHz
- Vertical:
Active Time: 1200 Lines
Blanking Time: 35 Lines
Sync Offset: 3 Lines
Sync Pulse Width: 6 Lines
Border: 0 Lines
- Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
Modeline: "1920x1200" 154.000 1920 1968 2000 2080 1200 1203 1209
1235 +hsync +vsync

- (108-125) Detailed Descriptor #4: Detailed Timing (1600x1200 @ 60Hz)
Pixel Clock: 162 MHz
Horizontal Image Size: 530 mm
Vertical Image Size: 300 mm
Refresh Mode: Non-interlaced
Normal Display, No Stereo
- Horizontal:
Active Time: 1600 Pixels
Blanking Time: 560 Pixels
Sync Offset: 64 Pixels
Sync Pulse Width: 192 Pixels
Border: 0 Pixels
Frequency: 75 kHz
- Vertical:
Active Time: 1200 Lines
Blanking Time: 50 Lines
Sync Offset: 1 Lines
Sync Pulse Width: 3 Lines
Border: 0 Lines
- Digital Separate, Horizontal Polarity (+), Vertical Polarity (+)
Modeline: "1600x1200" 162.000 1600 1664 1856 2160 1200 1201 1204 1250 +hsync
+vsync
- (126-127) Extension Flag and Checksum
Extension Block(s): 0
Checksum Value: 26

LIMITED WARRANTY

The warranty obligations of Kramer Electronics for this product are limited to the terms set forth below:

What is Covered

This limited warranty covers defects in materials and workmanship in this product.

What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

How Long Does this Coverage Last

Seven years as of this printing; please check our Web site for the most current and accurate warranty information.

Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

What Kramer Electronics will do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

What Kramer Electronics will not do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

How to Obtain a Remedy under this Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, please visit our web site at www.kramerelectronics.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required. You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

Limitation on Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

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IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A "CONSUMER PRODUCT" UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

Other Conditions

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This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, please visit our Web site at www.kramerelectronics.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

We welcome your questions, comments, and feedback.

Web site: www.kramerelectronics.com

E-mail: info@kramerel.com



SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing



P/N: 2900-000557



Rev: 4