

Kramer Electronics, Ltd.



USER MANUAL

Model:

VS-1202YC

Vertical Interval 12x2 Matrix Switcher

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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, like the **VS-1202YC Vertical Interval 12x2 Matrix Switcher**, we also offer excellent distribution amplifiers, presentation processors, interfaces, remote controllers and computer-related products. Congratulations on purchasing your Kramer **VS-1202YC Vertical Interval 12x2 Matrix Switcher**. This product is ideal for the following typical applications:

- Video production studios
- CCTV, home theater, and rental/staging applications
- Live broadcast or presentation applications such as switching between cameras in real-time

The package includes the following items:

- **VS-1202YC** *Vertical Interval 12x2 Matrix Switcher*
- Windows 95/98 Kramer control software
- Null-modem adapter
- Power cord
- 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 high performance **VS-1202YC** *Vertical Interval 12x2 Matrix Switcher* for s-Video (YC) or composite video and audio stereo signals includes 2 sets of 12 INPUT SELECTOR buttons and 2 sets of 2 video-audio outputs. In addition, the **VS-1202YC** *Vertical Interval 12x2 Matrix Switcher*:

- Is ideal for real-time applications requiring the preview of any input before routing it to an output
- Switches during the vertical interval, ensuring glitch-free transitions between genlocked sources
- Includes video bandwidth of 37 MHz, ensuring transparent performance in almost any typical video application
- Switches in the audio follow video mode
- Provides a true 2-output matrix
- Is a 1:4 distribution amplifier for s-Video (YC) or composite video
- Is controllable via the 2 sets of INPUT SELECTOR front panel buttons or by RS-232 commands transmitted by a PC or other serial controller

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 and positioning your Kramer **VS-1202YC** in a location free from moisture and away from excessive sunlight and dust

4 Your Vertical Interval Matrix Switcher

Figure 1 and Tables 1 and 2 define the **VS-1202YC**:

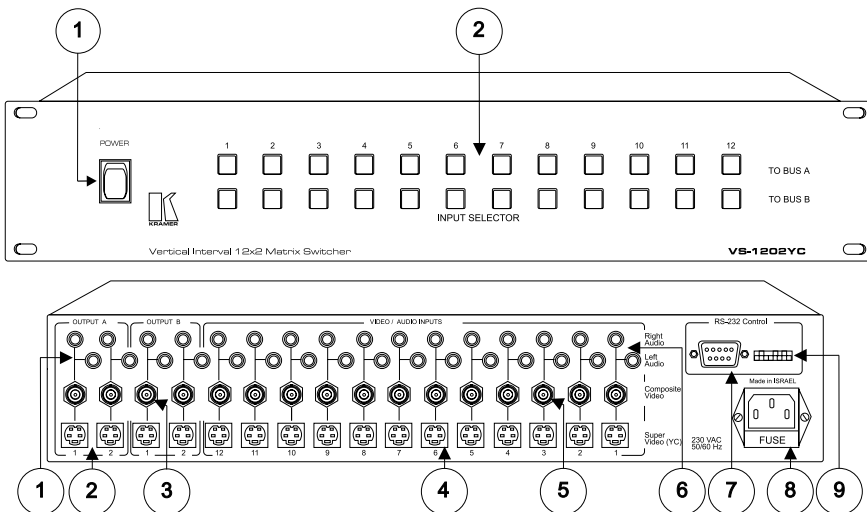


Figure 1: VS 1202YC Vertical Interval 12x2 Matrix Switcher

Table 1: Front Panel Features and Functions of the VS 1202YC

#	Feature	Function
1	POWER Switch	Illuminated switch supplying power to the unit
2	INPUT SELECTOR Buttons	Select the composite video or s-Video (Y/C)-audio source (from 1 to 12) for BUS A and/or BUS B

Table 2: Rear Panel Features and Functions of the VS 1202YC

#	Feature	Function
1	OUTPUT A and B AUDIO (R and L) RCA Connectors	Connect to the video-audio acceptors
2	OUTPUT A and B s-Video (Y/C) 4p Connectors	Connects to the s-Video (Y/C)-audio acceptors
3	OUTPUT A and B Composite Video BNC Connectors	Connects to the composite video-audio acceptors
4	INPUT s-Video (Y/C) 4p Connectors	Connects to the s-Video (Y/C)-audio source (from 1 to 12)
5	INPUT Composite Video BNC Connectors	Connects to the composite video-audio source (from 1 to 12)
6	INPUT AUDIO (R and L) RCA Connectors	Connect to the video-audio source (from 1 to 12)
7	RS-232 Connector	Connector for external RS-232 control
8	Power Connector with Fuse	230 VAC, 50/60 Hz, (115V AC, U.S.A.) power inlet
9	PROGRAM	Dipswitches setup (refer to section 5.2)

5 Connecting the Vertical Interval Matrix Switcher

To connect a **VS-1202YC** unit, do the following:

1. Connect up to 12 composite video sources to the appropriate composite video input BNC connectors, up to 12 s-video (Y/C) sources to the appropriate s-video (Y/C) input 4p connectors and connect the Audio (L and R) input RCA connectors.
2. Connect the composite video output BNC connectors to the composite video acceptors, the s-video (Y/C) output 4p connectors to the s-video (Y/C) acceptors and connect the Audio (L and R) output RCA connectors.
3. Connect the power cord to the mains electricity.

In addition, you can connect a PC via the null-modem adapter, if control via RS-232 is required (for example, when using the Kramer Control software or other controller), as section 5.1 describes.

5.1 Connecting a PC

To connect a PC to a **VS-1202YC** unit, using the Null-modem adapter provided with the machine (recommended):

- Connect the RS-232 DB9 rear panel port on the Master **VS-1202YC** unit to the Null-modem adapter and connect the Null-modem adapter with a 9 wire flat cable to the RS-232 DB9 port on your PC

To connect a PC to the **VS-1202YC**, without using a Null-modem adapter:

- Connect the RS-232 DB9 port on your PC to the RS-232 DB9 rear panel port on the Master **VS-1202YC** unit, as Figure 2 illustrates (depending on whether the PC has a 9-pin or 25-pin connector)

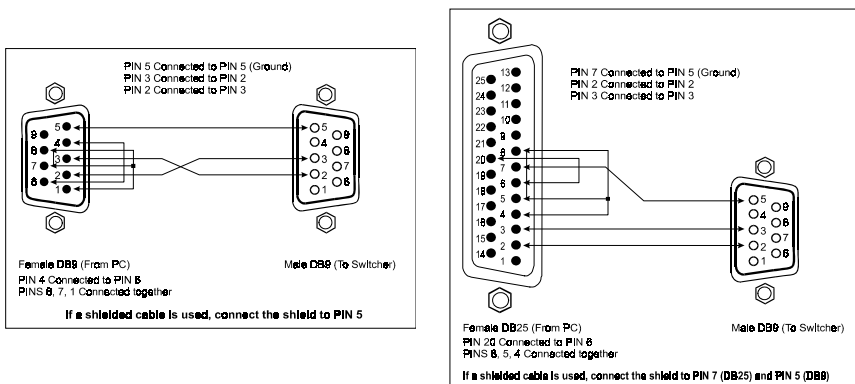


Figure 2: Connecting a PC without using a Null modem Adapter

5.2 Dipswitch Settings

The VS-1202YC unit includes a set of 8 dipswitches¹. Set the MACHINE #² on a VS-1202YC unit to determine the position of that VS-1202YC unit in the sequence³:

Table 3: Setting the MACHINE #

MACHINE #	DIP 1	DIP 2	DIP 3	DIP 4	DIP 5	DIP 6	DIP 7	DIP 8
1 = Master	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
3	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF
4	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON
5	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF
6	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON
7	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF
8	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

6 Technical Specifications

Table 4 includes the technical specifications:

Table 4: Technical Specifications of the VS 1202YC

Inputs:	12 composite video 1Vpp / 75 Ω on BNC type connectors 12 YC, Y = 1Vpp / 75 Ω, C = 0.3Vpp / 75 Ω, on 4p connectors 12 audio stereo 10 kΩ on RCAs
Outputs:	2x2 composite video, 1Vpp / 75 Ω 2x2 YC, Y = 1Vpp/75 Ω, C = 0.3Vpp/75 Ω 2x2 audio stereo 1V/100 Ω on RCAs
Video Bandwidth:	37 MHz - 3 dB
Crosstalk:	-40 dB at 5MHz
Output Coupling:	DC, clamped
Diff. Gain:	0.4%
Diff. Phase:	0.9 Deg
Audio THD:	0.02 %
Video S/N Ratio:	74 dB
Audio S/N Ratio:	80 dB
K-Factor:	< 0.05%
Switching:	Vertical interval
Control:	24 illuminated front-panel touch switches, RS-232
Dimensions:	19-inch (W), 7-inch (D) 2U (H) rack mountable
Power Source:	230 VAC, 50/60 Hz 117 VAC (U.S.A.) 11.5 VA
Weight:	3.7 kg. (8.2 lbs.) approx.
Accessories:	Power cord, Windows 95 / 98 control software, Null modem adapter

1 Pull a dipswitch DOWN to set it to ON. Pull a dipswitch UP to set it to OFF

2 When using a single unit, set the unit to MACHINE # 1

3 For example, when connecting 2 VS-1202YC units, set the MACHINE # on the first unit to one and on the second unit to 2

7 Communication Protocol

Communication between the PC and the Master **VS-1202YC** is performed using 2 bytes of information, as Table 5 defines. The rate of data transfer is 1200 baud, with no parity, 8 data bits and one stop bit.

Table 5: Structure of the Protocol

1st Byte							
N7	N6	N5	N4	N3	N2	N1	N0
MSB							LSB

2nd Byte							
N15	N14	N13	N12	N11	N10	N9	N8
MSB							LSB

Where:

N7 = 0 (continue bit).

N6N5N4N3 = 0111. These bits are only relevant for transmission from the machine to the PC, but are not required when transmitting from the PC to the machine.

N2N1N0 is the binary value of the machine being addressed (or of the machine sending its data) mi minus one, e.g. N2N1N0=000 to address machine #1 (the master); N2N1N0=101 to address machine #6.

N15 = 1 (continue bit).

N14 = 0 for all communication to and from the PC.

N13 is to be high if the data N12N11N10N9N8 is an opcode (see below).

N12N11N10N9N8 is data related to the status of the machine (for the case where N13 is low). When the machine sends its status, the value of the presently selected input is sent; when the PC instructs the machine to change state, the value of the input to be selected is sent.

The value is calculated using the formula:

$N12N11N10N9N8 = 2 * INPUT + OUTPUT - 2$

To disconnect input 1, $N12N11N10N9N8 = 11001$;

To disconnect input 2, $N12N11N10N9N8 = 11010$.

For example, to connect input 5 to output 1:

$N12N11N10N9N8 = 2 * 5 + 1 - 2 = 9$ (i.e. 01001 binary)

To connect input 8 to output 2:

$N12N11N10N9N8 = 2 * 8 + 2 - 2 = 16$ (i.e. 10000 binary)

When N13 is high, the following opcodes are defined:

N12N11N10N9N8 = 00001 instructs machine to send its present status.

N12N11N10N9N8 = 00010 success code (change in status was performed).

N12N11N10N9N8 = 00011 non-successful (change in status was not performed).

NB: The success/non-success codes are only used when instructing a machine that is present to change its status. The code returned in this case depends on whether the operation requested is valid or not.

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 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.



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

We welcome your questions, comments and feedback.

Kramer Electronics, Ltd.

3 Am VeOlamo Street. Jerusalem 95463, Israel Tel: (+972 2) 654 4000

Fax: (+972 2) 653 5369, E mail: kramereel@netvision.net.il

P/N: 2900 002027 REV 2