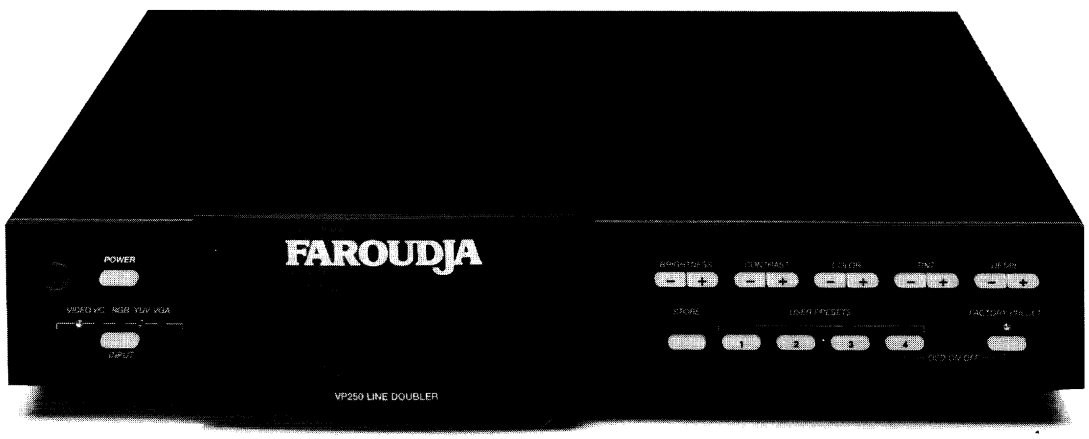
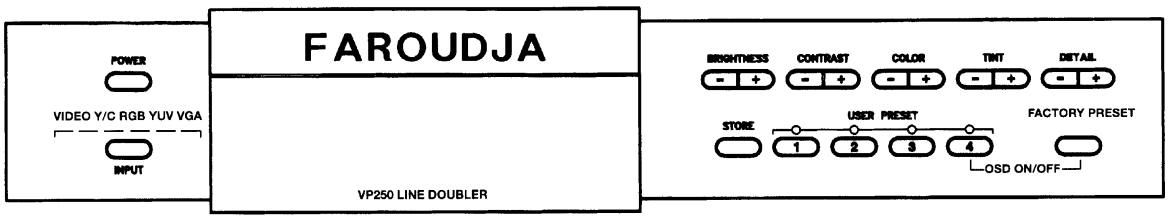


The Faroudja
VP250 Line Doubler

Owner's Manual



Front Panel
Figure 1

The Faroudja VP250 digital line doubler is a precision video processor used to convert interlaced PAL/NTSC video signals into high resolution, progressively scanned outputs. The VP250 has the added benefit of accepting component video signals (Y, R-Y, B-Y) and separate Red, Green, and Blue signals. It produces pictures with increased details and color reproduction while removing unwanted picture artifacts. When used with large screen projection systems, the results are a very "cinema-like" experience.

The list of features include Composite, Y/C (S/VHS), YUV/RGB inputs, a VGA pass-through, infrared and RS-232 remote control, on-screen graphics and custom presets. The VP250 will process the PAL and NTSC signal formats.

Four custom presets can be stored for each input and separately for NTSC and PAL for a total of 32 separate settings. All settings are stored in a non-volatile memory to prevent a loss in the event of a power failure. The infrared remote controls Power, Input Selection, Custom or Factory Preset Selection, Function Selection and Function Adjustment.

Adjusting for optimum performance is simple using the on-screen graphics. The graphics list the available picture controls while allowing the video signal to remain visible. This allows for accurate adjustments to the viewer's taste. By using the custom presets, variations of signal levels between sources or cable channels can be compensated to insure optimum image quality.

Outputs are provided on six BNC connectors as well as one 15 pin "D" connector. The BNC outputs provide Red, Green, Blue; Horizontal, Vertical and Composite Sync. Both outputs are active so two types of display devices can be used simultaneously.

The VGA pass-through accepts any computer input and is passed to the projector. The signal is not processed by the Faroudja circuitry.

OPERATION

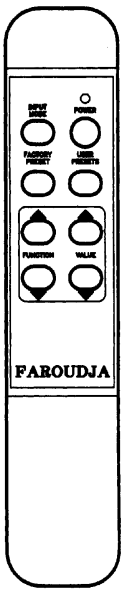
Your Faroudja processor may be controlled by three different methods: 1. Front Panel Controls, 2. Infrared Remote or 3. RS-232. The front panel controls (see Figure 1) are Power, Input , Brightness, Contrast, Color, Tint, Detail, Preset 1-4 and Factory Preset. The controls on the infrared remote (see Figure 2) are Power, Factory Preset, Preset, Function and Value

ON-SCREEN GRAPHICS

Whenever an adjustment of the picture is activated from the remote control, an on-screen graphic will appear listing the various control options (see Figure 3.) When using the front panel controls only the function selected will appear.

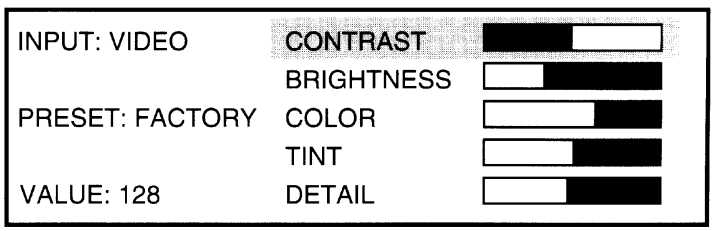
The graphics are displayed at the bottom of the screen so most of the video being viewed can be seen while fine tuning the settings. When using the infrared remote pressing the Function keys up or down toggle through the different control functions.

SYSTEM DESCRIPTION



Remote Control

Figure 2



On-Screen Graphics

Figure 3

The function is active when highlighted. Pressing the Value keys increases or decreases the amount of adjustment. In addition to the slidebar graphs next to the functions, there is also a value readout to provide a more accurate adjustment.

(Note: Picture functions do not operate when VGA input is selected.)

The on-screen graphics can be repositioned or deactivated by entering the appropriate commands via an RS-232 controller. Also the on-screen graphics can be moved by using a jumper located behind the front panel. (This requires removing the top cover of the unit. Faroudja should be contacted for assistance prior to opening unit). On the VP250 the on-screen graphics can be deactivated by simultaneously pressing preset Four and the Factory Preset buttons.

INPUTS

The on-screen graphics also indicates the status of the input type and presets. The input will list either Video, Y/C, RGB, YUV or VGA. If any input is selected but not connected, the image will be blank.

The VGA input is a "pass-through" connection, meaning that the signal goes straight from the input to the output (both the BNC and D-15 connectors), without any internal processing. This feature is beneficial for installations that use both video and computers as sources. Connecting the VGA output of the computer to the Faroudja Processor eliminates the need to run separate cables to the projector and the need for an external switcher.

PRESETS

The VP250 offers up to 32 user defined presets. To store a preset, adjust the picture to optimum performance. Then press the Store button located on the front panel and then one of the four User Presets within two seconds (the store request will stop after three seconds if a preset is not selected). The information is now stored for that preset and is saved even if there is a power loss. Each time an input is selected it will automatically switch to the last setting used.

CONTROLS

Having your monitor or projector correctly installed and adjusted is key to experiencing the full potential of a Faroudja processor. It can be difficult to adjust a picture to any one video source since there can be large variations in signal from the different sources available in your home theater.

To properly align the projector a test signal needs to be used to establish the correct reference settings. We recommend using a test pattern laserdisc or signal generator to align your system

The Factory Presets on the Faroudja processors are set to broadcast industry standards. They can be used as a reference and reset if controls get misaligned.

Brightness Level – This control is used to adjust the level of black in the picture. The optimum setting is when the dark areas are black, not gray, but you still can see some detail.

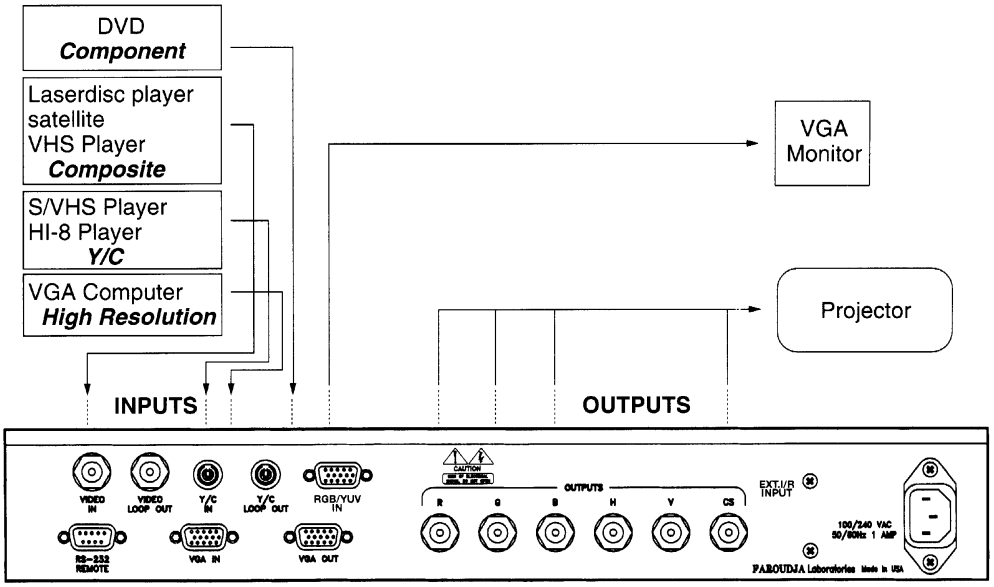
Contrast Level – This control is used to adjust the white levels in the picture. The optimum setting is when the white areas are bright while still seeing detail in the scene. If the contrast is set too high the projector will start to "bloom" or smear in the bright areas resulting in lose of detail. This is also very hard on the monitor or projector. Contrast and brightness interact with each other so it is recommended you recheck one after adjusting the other.

Color Level – This control adjusts the amount of color in the signal. The processor has an Automatic Gain Control (AGC) which monitors the color level and either boosts or cuts it to maintain proper levels. When you adjust the color level the AGC remains active and will reference your preferred settings when in operation.

Tint – Also known as Hue or Phase. Proper tint setting is critical to having correct colors. The processor includes an automatic tint circuit that maintains optimum adjustment. Incorrect tint can be seen as colors shifting towards either green or magenta. Adjust the tint settings so flesh tones are correct. (It is best to use the proper test patterns to adjust this.)

Detail – The Detail control adjusts the signal to "sharpen" the edges giving the image more depth and resolution. This can be very useful when using lower quality sources such as VHS tapes. Adjust the detail so maximum detail is visible. However, too much detail can make the image look over-enhanced and noisy due to the video noise in the signal. (If the image appears soft even when the detail is increased, check the projector focus and contrast setting.)

INSTALLATION



Back Panel Layout

The VP250 is designed to accept the video sources found in most projection applications. The composite input should be used with sources such as laserdisc players, VHS tape players and some satellite systems. The Y/C input should be used with S/VHS and HI-8 tape players and digital satellite systems. The YUV/RGB inputs should be used with high-end DVD players or professional tape players that offer this format. The computer D-15 input will "pass-through" any output from a computer to the projector or monitor eliminating the need to run separate cables (the computer signal by-passes any processing by the Faroudja circuitry).

The composite and Y/C inputs provide a loop-through connection that allows the input signal to be looped to another processor. This is an active loop so the processor needs to be **ON** to loop the signal. The looped output cable should never exceed six feet. Use a distribution amp for longer cable runs.

The processor is designed to be mounted either on a shelf or in an equipment rack. A minimum of 1.25" (one rack height) ventilation space needs to be provided above and below the unit. When using the rack mount kit remove the feet from the bottom of the unit. Slide the front panel into the cutout then bolt the unit to the support tray where the feet were originally mounted. Securely bolt this tray assembly to the front of the equipment rack.

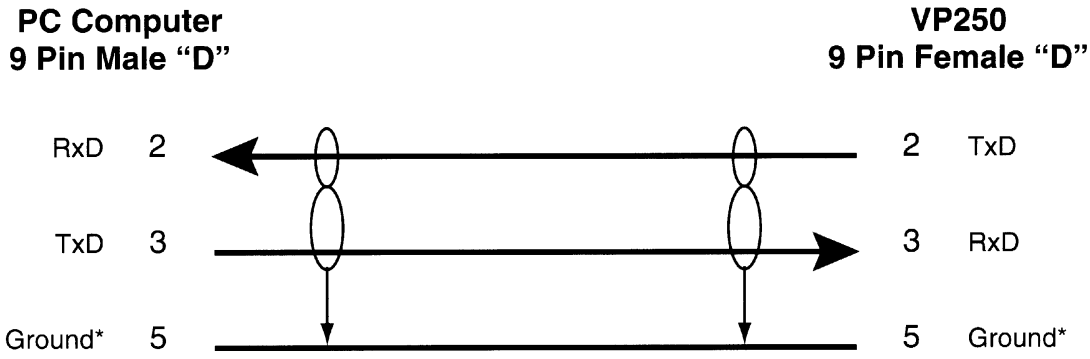
OUTPUTS

The VP250 offers two types of outputs. Six BNC connectors are used to output Red, Green, Blue plus separate or combined horizontal and vertical sync signals to the projector or monitor. There is also a D-15 computer connector that allows for connection of a computer monitor. Both outputs can be used simultaneously.

Important Note: Computer signals require separate H and V sync. When using a computer input to the Faroudja processor, separate H & V sync must be used on the output from the processor to the projector.

Projector Setup – To get the maximum benefit from the Faroudja processor, the projector or monitor must be set to exact specifications. The Faroudja processor should be set to the factory preset position while adjusting the projector or monitor. Adjustments should be made while using either a test generator or a test disc that contains the appropriate setup patterns. These test signals should pass through the Faroudja processor to the projector or monitor. Follow the adjustment procedures as outlined by the projector or monitor manufacturer.

Once this is accomplished, the projector settings should be saved and not changed. Any changes to the signal should now be made at the Faroudja processor. This procedure insures that if the controls are misalinged, just pressing the factory preset restores the image to a reference level.



***2 Conductor Shielded Wire Recommended**

VP250 RS-232 Cable

RS-232 PROGRAMMING INSTRUCTIONS

The VP250 can communicate with other controllers that provide an RS-232 interface. Adjustable baud rates are 19,200, 9,600, 4,800, 2,400 and 1,200 with 9,600 as factory default. (Contact factory for details if baud rate needs to be changed). Communication settings are 8 bits, N parity and 1 stop bit. A terminal emulator program, like the one found in Windows, can be used to control the unit.

All RS-232 commands require the header of the model number of the unit to be used at the beginning of each new command string, followed by any of the commands listed below. Commands may be of either upper or lower case characters. All commands are terminated by a carriage return, (13H).

RS-232 Commands:

The following commands can be listed as a multiple command separated by a comma:

B = Brightness (0 to 255)
C = Contrast (0 to 255)
K = Color (0 to 255)
T = Tint (0 to 255)
D = Detail (0 to 15)
Example: VP250, B100, C75 (ENTER)

The following commands must be entered individually:

HELP = Displays a help menu
P0 = Factory Preset (not user changeable)
P1 = User Preset 1
P2 = User Preset 2
P3 = User Preset 3
P4 = User Preset 4
L1 = Store User Preset 1
L2 = Store User Preset 2
L3 = Store User Preset 3
L4 = Store User Preset 4
ON = Turn On the VP250
OFF = Turn Off the VP250
ST = Return current settings status to controller
V = Select Video Input Mode
Y = Select Y/C Input Mode
X = Select VGA Input Mode
E0 = Echo Off
E1 = Echo On (default)

The On-Screen-Display (OSD) location on the monitor can be changed using RS232 commands. The OSD can also be disabled by RS232.

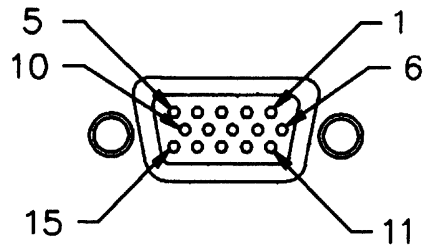
OSD ON = Enable the OSD
OSD OFF =Disable the OSD
OSD xxx,xxx = (Where xxx = 0 to 159) Select placement of OSD (factory default: 0,35)

OSD can also be changed by moving a jumper located inside the unit. Contact factory for details.

APPENDIX A

VGA Connector Pinout

Pin	Function
1	Red Video
2	Green Video
3	Blue Video
4	Not Used
5	Ground
6	Red Return (Ground)
7	Green Return (Ground)
8	Blue Return (Ground)
9	Composite Sync
10	Composite Sync Return (Ground)
11	Not Used
12	Not Used
13	Horizontal Sync
14	Vertical Sync
15	Not Used



15 PIN 'D' VGA CONNECTOR
FRONT VIEW

Figure 8

APPENDIX B

Cable Lengths and Distribution Amplifiers

To achieve the best results from your installation, we suggest the following minimum standards for cable runs when an VP250 is used.

To preserve the video quality of the VP250, the signal path should be no more than –3db down at 25 MHz through a 75 ohm cable. Any distribution amplifier should have a bandwidth no less than –3db down at 25 MHz.

The following cable lengths are the maximum recommended continuous lengths of 75 ohm coax cable and 15 pin VGA cable (when using the VGA output).

Cable Type	Maximum Length
Mini BNC cables, 75 ohm 1.15nS/Foot propagation	100 Feet
RG-59/U type cable, 75 ohm	150 Feet
75 ohm precision video cable Belden 8281	200 Feet
15 pin, high resolution VGA cables utilizing individual high resolution mini-coax cables for each signal from VP250 to monitor.	25 Feet

INPUT SIGNALS (NTSC)	525 Line 2:1 Interlace
Video	1Vp-p, Negative Sync, 714mV Luminance
Y/C	Y/C (3.58) Non-Composite, 700m/Vp-p Y, 286mVp-p C (Burst)
RGB	700mVp-p Non-Composite, 1Vp-p Composite
YUV	Y(1V w/Sync), R-Y(714mV), B-Y(714mV)
Composite Sync	Negative, >4Vp-p Composite
VGA Standard	15 pin 'D' Connector, VGA Standard
INPUT SIGNALS (PAL)	625 Line 2:1 Interlace
Video	1Vp-p, Negative Sync, 700mV Luminance
Y/C	Y/C (4.43) Non-Composite, 700m/Vp-p Y, 286mVp-p C (Burst)
RGB	700mVp-p Non-Composite, 1Vp-p Composite
YUV	Y(1V w/Sync), U(700mV), V(700mV)
Composite Sync	Negative, >4Vp-p Composite
OUTPUT SIGNALS (NTSC)	525 Line Progressive Scan/1050 Line per Frame
R, G, B	Non-composite, Positive, 714mVp-p
Vertical Sync	59.94Hz, Negative, 4Vp-p, 75 Ohm
Horizontal Sync	31.5KHz, Negative, 4Vp-p, 75 Ohm
Composite Sync	31.5KHz/59.94Hz, Negative, 4Vp-p, 75 Ohm
Output: VGA:	RGB 0.700mV Pk-Pk @ 75 Ohms
(Line Doubler Mode)	Horizontal Sync, BNC, 31.4 Khz, TTL @ 2K Ohms Vertical Sync, BNC, 59.94Hz, TTL @ 2K Ohms Composite Sync, BNC, 31.4 Khz H, 59.94Hz V, TTL @ 2K Ohms
Output: VGA:	RGB See computers graphics
(VGA Input Mode)	standard, @75 Ohms Horizontal Sync, See computers graphics standard, @ 2K Ohms Vertical Sync, See computers graphics standard, @ 2K Ohms Composite Sync, See computers graphics standard, @ 2K Ohms *Note:* The scan frequencies are not modified when using the VGA input loop.
OUTPUT SIGNALS (PAL)	625 Line Progressive Scan/1250 Line per Frame
R, G, B	Non-composite, Positive, 700mVp-p
Vertical Sync	50Hz, Negative, 4Vp-p, 75 Ohm
Horizontal Sync	31.25KHz, Negative, 4Vp-p, 75 Ohm
Composite Sync	31.2KHz/50Hz, Negative, 4Vp-p, 75 Ohm
POWER INPUT:	100-240 VAC, 50/60Hz, 35 Watts (Auto ranging)
DIMENSIONS:	2.625" H x 17.00" W x 16.50" D 66.675mm H x 431.8mm W x 419.1mm D
WEIGHT:	17 LBS, 6.34 Kg

Design and specifications are subject to change without notice.

WARRANTY INFORMATION

All FAROUDJA Laboratories products are warranted to the original purchase against defective materials and workmanship under normal use and service for a period of one (1) year from the date of shipment. This warranty shall be of no force and effects if modifications have been made by the purchaser or its agents or employees or if damage results from connecting the product to incompatible equipment or power. This warranty will also be void if the product is not returned to FAROUDJA Laboratories in the original shipping container.

The purchaser's sole remedy with respect to the breach of this warranty is for the selling distributor to repair or replace, at its option, those products which the selling distributor determines to have breached this warranty within the specified period.

Any claims under this warranty should be made by telephone or in writing to the selling distributor or FAROUDJA Laboratories. No products should be returned to the selling distributor or to FAROUDJA Laboratories without its prior consent, and then, only with freight prepaid. FAROUDJA Laboratories will prepay the return shipment.

Specifications and price change privileges are reserved.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING, WITHOUT LIMITATIONS, ANY IMPLIED WARRANTY FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

FAROUDJA Laboratories
750 Palomar Ave., Sunnyvale, California 94086
Tel: 408-735-1492 Fax: 408-735-8571