Versa® DRIVE D2

User's Guide

ELEMENTLABS

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Rev. 1.00, February, 2007
Part #117-0152

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OPERATIONS

Introduction

The Versa® DRIVE D2 video processor converts a DVI video signal into serial data streams that drive Versa® TILE, Versa® TUBE, and Versa® RAY Systems. Through the use of a pixel map that is created in RasterMAPPER™ and downloaded into the Versa DRIVE, the D2 can map any incoming pixel data to any outgoing pixel address.

The Versa DRIVE D2 also stores various system parameters and uses them in calculating the final output data. These parameters are set via RasterMAPPER or directly on the front panel of the Versa DRIVE.

RasterMAPPER

RasterMAPPER™ software is used to program the Versa DRIVE D2. RasterMAPPER's main functions are to create a map which defines the relationship between pixels on the video source and the actual Versa TILE, TUBE, PIXEL, or RAY System, to adjust Versa DRIVE D2 parameters, and to create pattern files for use in the Versa DRIVE C1.

To create a map refer to the RasterMAPPER Quick Start Guide or RasterMAPPER Manual.

System Requirements

- A Windows or OSX computer running Rastermapper 3 Software. This software is available as a free download from our website (http://www.elementlabs.com).
- An available 9 pin RS-232 serial port for loading pixel maps and color balancing from Rastermapper

NOTE Most desktop and laptop PC's have a built in RS-232 serial port, however many recent PC's and all Macintosh computers are lacking this connection. In this case you will need a USB to serial adapter. Element labs recommends and the supports the Keyspan USA-119HS adapter as it has proven compatible with all known systems. This adapter is available through Element Labs or most major computer retailers and will be required if you do not have a native serial port. The included Keyspan drivers must also be installed on your computer.

- A true digital DVI (DVI-D) video signal from a computer or other video output device. This can be the same computer you use to create your Rastermapper maps or a separate source.

NOTE The D2 processor runs on a digital only DVI signal, meaning that commonly used analog VGA to DVI adapters will not work on either the input or output of the processor. Valid sources include:

- A PC or Macintosh desktop computer or Media Server with a DVI video card installed
- A PC Laptop with a native DVI output
- All current Macintosh laptops and the Mac Mini (smaller mac laptops will require a mini DVI to DVI adapter available through Apple retailers)
- A video format converter such as the Folsom Scan Converter or Geffen HDSDI to DVI Scaler

Recommended Accessories

- A true DVI video monitor so as to be able to monitor the video feed being sent to the D2.

NOTE A native 1024x768 monitor is recommended as this is the resolution of the D2 processor, but any DVI monitor will work. Once again note that DVI to VGA adapters will not work for this purpose.

- A Geffen DVI Detective.

NOTE This device can alleviate many problems with configuring DVI outputs especially when using media server software. It is a small adapter that goes in between the computer DVI output and the processor. The adapter will send a constant ID to the computer, telling it to send a DVI signal. This means that processors and monitors after it can be unplugged, added, turned off, reset etc. without the computer seeing it and attempting to re-configure the video output settings. This is also helpful for driving DVI signal extenders such as a DVI over Fiber connection. DVI detectives are available through Element Labs, directly from Geffen, or through many online retailers.

Quick Start

NOTE The D2 must be OFF when plugging or unplugging any DVI connections. Failure to do so may damage equipment.

1. With the D2 and computer OFF, connect the DVI output of the computer to the input of the D2. Connect a loop-thru monitor to the output of the D2 if you need one.
2. Connect the AC power cable to the D2.
3. Connect the serial RS232 from your computer to the D2.
4. Connect the serial output(s) of the D2 to Versa TILE, TUBES, PIXELS, or RAYS.
5. Turn on the Versa DRIVE D2, allow it to boot.
6. Turn on the computer, allow the computer to begin to start up.
7. Turn on the loop-thru monitor if you have one. It is important to turn your local computer monitor on last so the DVI chain will ID correctly. If you are using a DVI Detective ignore this advice.
8. Press the menu button from the D2 front panel and enter the input menu. Verify the following settings:
   SERIAL = RS232
   ID = 1
   V-SYNC = HIGH/PC (For connection to Computer)
   or
   V-SYNC = LOW (For connection to Folsom Scan Converter)
9. Verify that the DVI output is recognizing a display and is set to 1024x768 @ 60hz.
10. Verify that the D2 recognizes the DVI signal by setting the display mode to video from the display mode menu and watching for a steadily blinking DVI light on the front panel.
11. Open Rastermapper and connect to the D2 under the Versa DRIVE Control tab.
12. Create a map of your system in RasterMAPPER™ and send a map to the Versa DRIVE D2.
13. The Versa DRIVE D2 will now display the video information arriving at its DVI port on the configured installation.

General Information

Front Panel

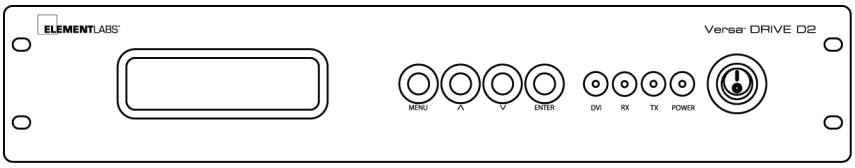

Figure 1.1 Versa DRIVE D2 Front Panel

The Versa DRIVE D2 has the following controls and displays on its front panel:

- Four function buttons include: MENU, Λ (Up), Λ (Down), ENTER
- DVI Link indicator: Blinks steadily when there is a valid video signal at the DVI input or when the unit is creating a test pattern.
- TX and RX indicators: Blinks when data is transmitted and received on the RS232 serial connection.
- POWER indicator: Indicates the unit is turned on.

Rear Panel

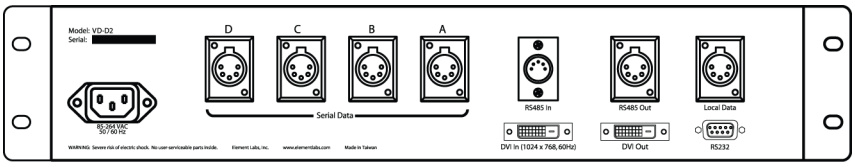

Figure 1.2 Versa DRIVE D2 Rear Panel

The Versa DRIVE D2 has the following connectors on the rear panel:

- 85-264 VAC 50/60 Hz Male IEC Connector
- Serial Data Outputs A, B, C, D Female 6-Pin XLR
- RS485 In/Out Male and Female 5-pin XLR
- Local Data Output Female 4-pin XLR or Female 4-pin JYC connector
- DVI In/Out Female DVI-D (Dual Link)
- RS232 Female 9-pin D-Sub

Setup

Mounting

The Versa DRIVE D2 is equipped with four plastic feet for tabletop operation.

The D2 can also be rack mounted.

If necessary, the feet can be removed. Pry the center peg up with a small screwdriver. Pull the foot out of its mounting hole.

Connections

85-264 VAC 50/60 Hz – Provides power to the unit.

Serial Data Outputs A, B, C, D – Serial data for use with Versa TILE, Versa TUBE, Versa PIXEL, and Versa RAY products. Each output is capable of addressing 2048 pixels, therefore, the total pixel output of a Versa DRIVE D2 is 8192 pixels.

RS 232 Input – Serial connection to personal computer for programming the Versa DRIVE D2 using RasterMAPPER™.

RS 485 Input – Serial connection to personal computer for programming the Versa DRIVE D2 using RasterMAPPER. Useful when the RasterMAPPER computer is in a remote location from the D2 or for programming multiple D2s.

RS485 Outputs – RS 485 Pass-thru. Serial connection to another D2 for multiple D2 system programming.

NOTE RS-485 connections are only necessary when remote access to settings on multiple D2 units is required. To utilize RS-485 connections from a computer with RS-232 you will need an RS-232 to RS-485 converter with a terminal block output connector and a female 5 pin XLR tail. The only currently supported converter is the ADAM-4520. Please contact Element Labs if you require more information on this setup.

DVI Input – Digital Video Interface (DVI-D) input connection. DVI-D input is the source video for display.

DVI Output – Digital Video Interface (DVI-D) output connection. DVI output used to connect another D2 or more commonly to connect the computer monitor view the source video.

Versa DRIVE D2 Menu System

Navigation

Function buttons:

- MENU – Steps back one level in the menu system
- Λ (UP) – Scrolls up through available menu items or parameter values
- V (DOWN) – Scrolls down through available menu items or parameter values
- ENTER – Selects a menu item

Modifying Parameters

To change the value for a parameter:

1. Press ENTER when the cursor is at the item you want to select.
2. Press the Λ (UP) and V (DOWN) buttons to scroll through the available item values.
3. Press ENTER again to choose the new value.

Menus

The menu structure and sub-menu options are as follows:

Main Menu	Item	Settings
INPUT	SERIAL	RS232 or RS485
	ID	1 – 32
	V-SYNC	HIGH/PC or Low
DISPLAY MODE	MODE	VIDEO or PATTERN
	PAT	TEST COLORS & PATTERNS
BRIGHTNESS	BRIGHTNESS	1-10
	INTERVAL	SECONDS
OFFSET	HORIZ	0-1023
	VERT	0-767
BACKLIGHT	TIME	ON, OFF, 5 SEC, 1 MIN
INFORMATION	PIXEL COUNT	LIGHTS #
	FIRMWARE	DATE & VERSION #

Input

The Serial Menu item has two options: RS232 or RS485

- RS232 can only be used for controlling one Versa DRIVE D2 at a time
- RS485 can be used for controlling up to 32 Versa DRIVE D2s simultaneously

The ID menu item sets the ID of the D2 if multiple D2's are connected via their RS 485 connection.

- If RS232 is in use, set the ID to "1".

V-Sync High/PC – Sets the D2 DVI input to be compatible with a personal computer.

Low – Sets the D2 DVI Input to be compatible with the Folsom Scan Converter.

Display Mode

The Display Mode submenu has two options: Mode and Pattern.

The Mode menu item selects one of two output sources:

- VIDEO – Sets the output of the D2 to the incoming DVI Signal
- PATTERN – Sets the output of the D2 to the chosen test pattern
  - DYNAMIC 1– Runs through all colors and checkerboard designs
  - DYNAMIC 2 – Begins with all pixels in black. Pixels turn white one at a time until the entire pixel list has been tested. Chase pattern that tests every pixel individually.
  - W+B EVEN – Shows the inverse of B+W ODD
  - B+W ODD – Shows odd number pixels in black, even number pixels in white
  - CYAN, MAGENTA, YELLOW, BLACK, WHITE, BLUE, GREEN,RED – Static color test patterns. Pixels will display the color selected.

NOTE When test pattern is set to Dynamic 2, each Serial Output that is connected to a panel begins a test. If there are panels connected to different Serial Outputs, the test should start on the first panel for each Output and test all pixels up to 2048.

Brightness

The Brightness mode adjusts the overall brightness of the system with 10 being the highest and 1 being the lowest.

NOTE When using the D2 for displays that will be filmed or televised, the brightness should be set on 10 to reduce flickering on camera. Intensity can be controlled by the video signal. Newer firmware versions have a Brightness Interval setting. For VersaTILE systems this should always be set on 1 second. For VersaTUBE, RAY, and PIXEL systems, this can be set on a longer interval to smooth video playback.

Brightness Interval - Sets the time between the transmission of brightness information in the serial data stream.

Offset

The Offset parameters adjust which area of the 1024x768 screen is being sent to the Pixel Map. In general, Pixel Maps are created towards the "origin" at the top left corner of the screen (position 0,0). Using the offset settings you are then able to place this map towards the center or any other area of the video output.

- HORIZ – Adjusts Horizontal offset from 0 to 1023
- VERT– Adjusts Vertical from 0 to 767

Backlight

The Backlight mode adjusts the amount of time the backlight stays active on the front panel of the D2.

- TIME – Selects from options ON, OFF, 5 SEC, or 1 MIN

Information

The Information mode does not have any adjustable parameters.

The information mode displays:

- PIXEL COUNT -- Displays the amount of pixels in a map
- FIRMWARE – Displays the version and revision date

Specifications

Part Number	VD-D2
Width	1 standard rack unit (430mm/19.0″)
Height	2U (88.8mm/3.5″)
Depth	304.8mm (12″)
Construction	Powder Coated Steel
Mounting	Stand alone with plastic feet or rack mounted with included rack ears
Front Panel	Power Switch
	LCD Display with backlight
	4 control buttons – Mode, Up, Down, Enter
Rear Panel	4 Serial Data outputs (A, B, C, D)
	1 RS 232 Serial Data Input
	1 RS 485 Serial Input
	1 RS 485 Serial Output
Connections	AC Power: -240 VAC 50/60Hz
	4 XLR 6-Pin Serial Outputs (A, B, C, D)
	1 Local Data output
	1 XLR-M 5-Pin (RS485 Input)
	1 XLR-F 5-Pin (RS485 pass through)
	1 DB-9 Male (Serial input for pixel map download)
	1 DVI-D input
	1 DVI-D output (pass through)
Features	8,192 pixel output on four(4) Serial Data outputs.
	30 FPS (frames per second) output rate
	DVI input captures 1,024 x 768 60Hz display
Environmental	Indoor Use Only
Certifications	ETL, LE (pending)