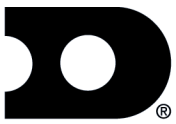


VIP-4400
Video Image Processor

Operator's Manual

DD1709843

Rev 06—07 July 2015



DAKTRONICS

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Section 1: Introduction

This manual is intended to help Daktronics customers operate the VIP-4400. Daktronics recommends reviewing all of the information in this manual in order to understand the features that the VIP-4400 offers.

This manual assumes the user has a basic working knowledge of the Windows® operating system, including using menus and folders. If a user is unfamiliar with this operating system, there are many resources available to assist in understanding it. Terms that describe commonly used personal computer operations are used frequently in this manual.

1.1 Daktronics Contact Information

Daktronics Customer Service is available 24/7 via phone or online connection.

Daktronics Customer Service can be reached via telephone by calling either number below:

- United States and Canada: 1-800-DAKTRON (1-800-325-8766)
- Outside the U.S. and Canada: +1-605-697-4000

Daktronics online customer support can be reached by entering the address below into a web browser:

- www.daktronics.com/support

1.2 Product Information

The VIP-4400 serves as an interface between a video source and a video display. The VIP-4400 has 10-bit digital processing that allows for 4.4 trillion colors depending on display type. It accepts standard and high-definition digital formats such as HD-SDI (up to 1080i), SD-SDI, VGA, SVGA, XGA, and SXGA in RGB or DVI. The front and rear views of the VIP-4400 are illustrated in **Figure 1** and **Figure 2**, respectively.



Figure 1: VIP-4400 – Front View

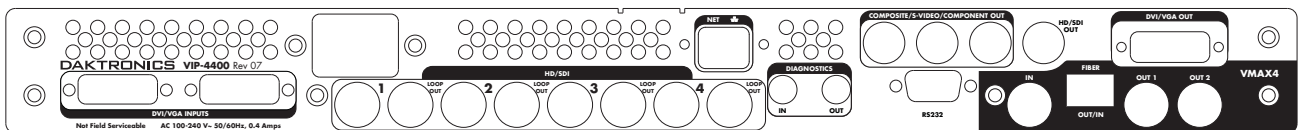


Figure 2: VIP-4400 – Rear View

The VIP-4400's Active Input architecture provides aspect ratio versatility, allowing a wide range of video sources to display on video boards with either traditional or non-traditional aspect ratios. Active Input architecture also makes it possible to accept multiple live inputs and incorporate zoning, alpha blending, keying, and seamless switching effects into a video presentation.

The VIP-4400 optimizes video signals for correct appearance on LED video displays. The processor uses True Pixel™ processing to reduce errors and noise inherent in video signals. Features of True Pixel™ processing include color space conversion, adjustable gamma correction, motion processing, and 3-D noise reduction.

Section 2: System Logic Flow & Input Options

2.1 System Logic Flow

The VIP-4400 accepts digital video sources as well as DMP content sent using Daktronics proprietary V-Max™ 4 signal. This content typically consists of real time data, animations, AVIs, schedules, and sequences.

After the VIP-4400 processes the incoming video signals, it sends a V-Max™ 4 signal to an A/B switch. The primary system is routed to Port A and the backup system is routed to Port B. If the primary system goes down, the A/B switch can send data from the backup system. **Figure 3** illustrates one possible way to configure a control system. Please contact a Daktronics project manager for specific control system information.

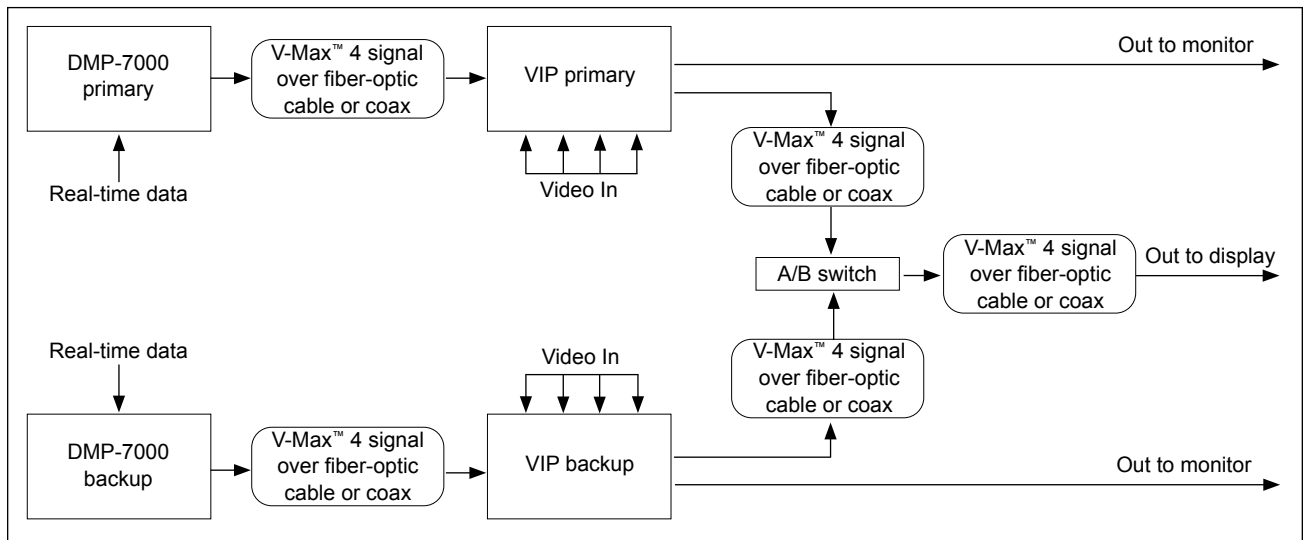


Figure 3: VIP-4400 System Logic Flow

2.2 Input & Output Options

Each VIP-4400 is capable of simultaneously displaying up to four video sources in addition to one V-Max™ 4 signal. The video sources can be composed of a variety of video standards.

Up to four SD-SDI or HD-SDI sources may be displayed at one time. These sources may come from a variety of digital output devices including cameras, decks, switchers, and DDRs. A BNC connection located in the lower center section of the VIP-4400 accepts the feeds. Refer to **Figure 4**.

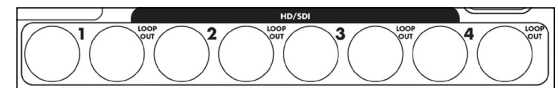


Figure 4: SD-SDI & HD-SDI Loop Connectors

Two DVI/VGA ports can accept either DVI or VGA sources. Two sources may be connected at one time. These sources come from a variety of devices such as desktop computers, laptops, or content servers. Refer to **Figure 5**.



Figure 5: DVI/VGA Ports

The processor accepts V-Max™ 4 signals transmitted over coaxial or fiber-optic cable. Refer to **Figure 6**. Only one input can be active at a time. V-Max™ 4 signal may come from a DMP-7000, another VIP-4400, or a VIP-4510.

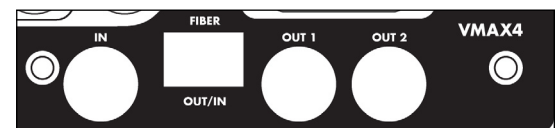


Figure 6: V-Max™ 4 Inputs/Outputs

2.3 EDID Supported Resolutions

VGA Resolution (Height x Width)	VGA Frame Rate (Hz)	DVI Resolution (Height x Width)	DVI Frame Rate (Hz)
480 x 640	60	480 x 640	60
480 x 640	75	480 x 640	72
600 x 800	56	480 x 640	75
600 x 800	60	600 x 800	56
600 x 800	72	600 x 800	60
600 x 800	75	600 x 800	72
768 x 1024	60	600 x 800	75
768 x 1024	70	768 x 1024	60
768 x 1024	75	768 x 1024	70
1024 x 1280	60	768 x 1024	75
864 x 1152	75	1024 x 1280	60
720 x 1280	60	864 x 1152	75
960 x 1280	60	720 x 1280	60
		960 x 1280	60
		*900 x 1440	60

*Note: 900 x 1440 is the default DVI resolution.

2.4 SDI Supported Resolutions

SDI Resolution	SDI Frame Rates (Hz)
480i	59.94
576i	50
720p	29.97, 30, 49.95, 50, 59.94, 60
1080i	49.95, 50, 59.94, 60
1080p	29.97, 30

Section 3: Configuration Using Venus® 7000 Software

The V7 V-Link® Controller application in the Venus® 7000 software program allows the operator to control multiple VIP-4400s. Each VIP-4400 can output up to four video sources simultaneously. This section focuses on setting up, adjusting, and operating multiple VIP-4400s and their inputs using the Venus® 7000 software. Refer to ED-14551 DMP-7000 Controller Operator's Manual for more information.

3.1 Using Venus® 7000 Software

To configure the VIP-4400 using Venus® 7000 software, follow the steps below:

1. Open the V7 V-Link® controller application in the Venus® 7000 shell by clicking the **V-Link** icon or by pressing **V**. The **V7 V-Link Controller** dialog box opens; refer to **Figure 7**.

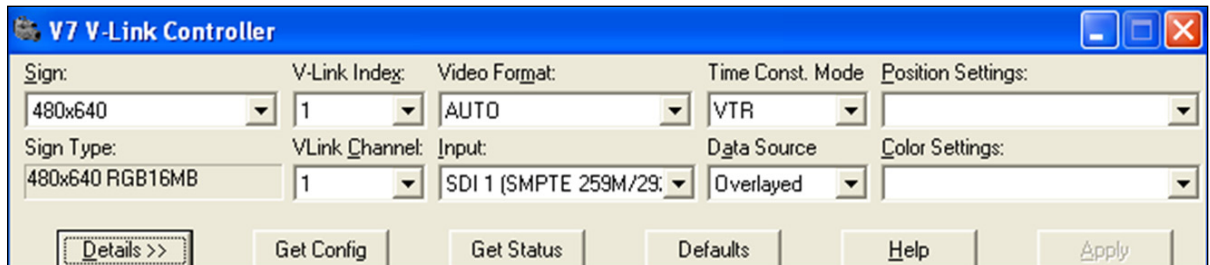


Figure 7: V7 V-Link Controller Dialog Box

2. Click the **drop-down arrow** next to **Sign** to select the sign to control if the correct sign is not already displayed in the **Sign** drop down box. After selecting a sign, the **Sign Type** field automatically populates.
3. Click the **drop-down arrow** next to **V-Link Index** to select which VIP-4400 to control, or press **Alt-X** and use the **up** and **down arrows** to select it. Up to three VIP-4400s may connect to the DMP-7000 per sign.
4. Click the **drop-down arrow** next to **VLink Channel** to select the channel to control, or press **Alt-C** and use the **up** and **down arrows** to select it. Up to four channels can display per VIP-4400.
5. Click the **drop-down arrow** next to **Video Format** to select the preferred format for each channel, or press **Alt-M** and use the **up** and **down arrows** to select the video format.

Note: Although listed, NTSC, PAL, and SECAM formats are not supported by the VIP-4400.

6. Click the **drop-down arrow** next to **Time Const. Mode** to select the preferred mode.

Note: VTR works well for most applications.

7. Click the **drop-down arrow** next to **Input** to choose the desired input or press **Alt-I** and use the **up** and **down arrows** to select it. Refer to **Figure 8**. After completing the setup procedure and configuring the settings for this input, adjust the settings for each of the other inputs as well.

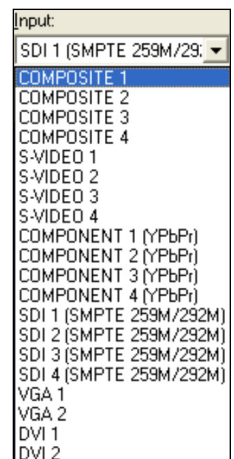


Figure 8: V-Max™ 4 Input Options

8. Click the **drop-down arrow** next to **Data Source** and select **Video** to play video content on the display. Refer to **Figure 9**.
9. Click **Details** or press **Alt-D**. The **V7 V-Link Controller** dialog box expands as shown in **Figure 10**.
10. Change the **Top** and **Left** quantities in the **Viewable Area** section to determine what portion of the video feed will display. The default setting is the largest area of good video feed available for display. This feed is centered and may be adjusted as desired. Refer to **Figure 10**.

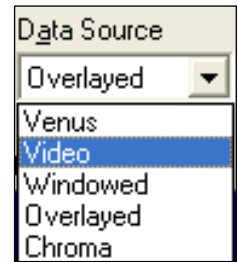


Figure 9: V-Max™ 4 Data Source Options

Note: Save any changes to the **Viewable Area** and/or source **Window Area** settings. Click **Save Position Settings** or press **Alt-V** to open the **Save Position Settings** dialog box. Type the name of the position settings (for example, "Position 1"). Click **OK** or press **Enter** to save the settings under the entered name. Recall saved settings using the **Position Settings** drop-down list.

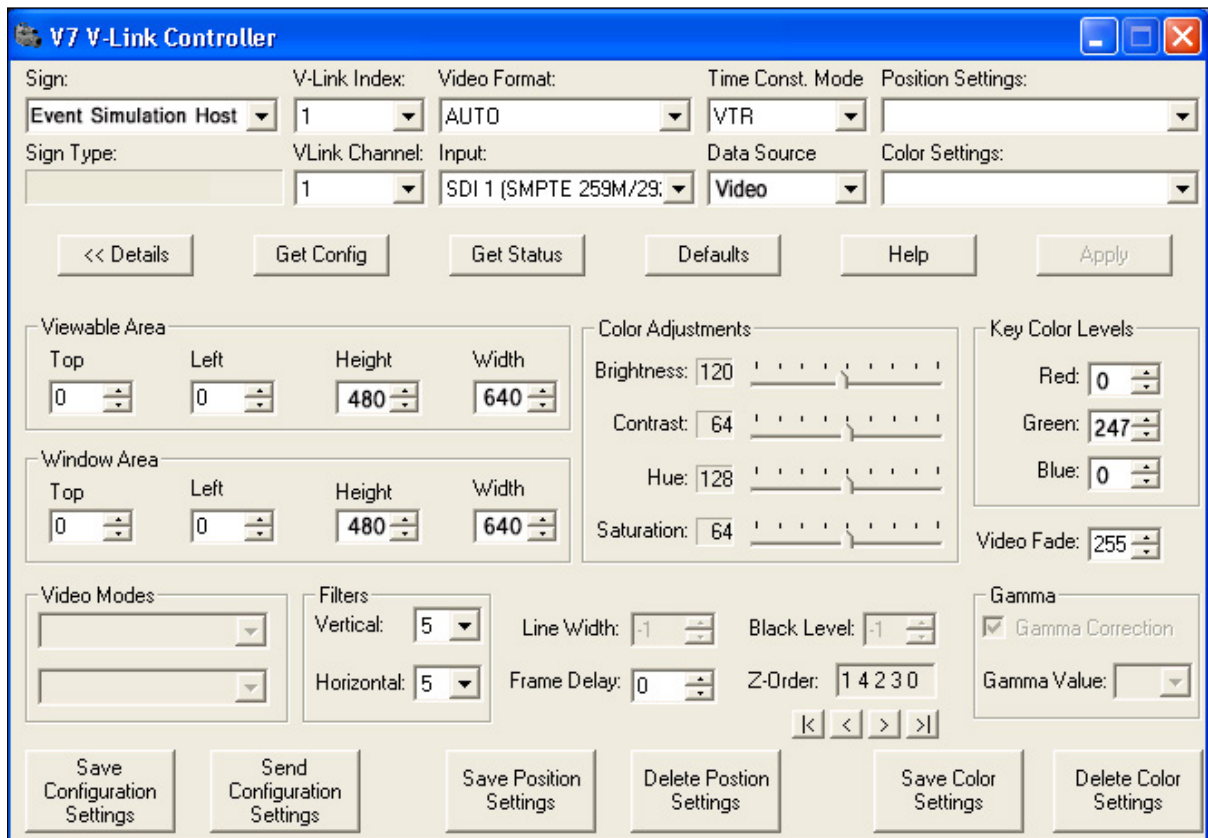


Figure 10: V7 V-Link Controller Dialog Box

11. Adjust display **Brightness**, **Contrast**, **Hue**, and **Saturation** values with the slider bars in the **Color Adjustments** section.
 - To adjust brightness, move the **Brightness** slider bar or press **Alt-N** to move the cursor to the **Brightness** setting and use the **left** and **right arrows** to adjust.
 - To adjust contrast, move the **Contrast** slider bar or press **Alt-O** to move the cursor to the **Contrast** setting and use the **left** and **right arrows** to adjust.

- To adjust hue, move the **Hue** slider bar or press **Alt-U** to move the cursor to the **Hue** setting and use the **left** and **right arrows** to adjust.
 - To adjust saturation, move the **Saturation** slider bar or press **Alt-T** to move the cursor to the **Saturation** setting and use the **left** and **right arrows** to adjust.
12. Click **Save Color Settings** or press **Alt-E** to save the color settings. The **Save Color Settings** dialog box opens. Type the name of the color settings (for example, "Color 1") and click **OK** or press **Enter**. The settings are saved under the entered name and can be recalled using the **Color Settings** drop-down list.
 13. Press **Alt-K** to move the cursor to the **Key Color Levels** box and use **Tab** or **Shift-Tab** to move between the color level boxes to set a key color if using overlay. Use the **up** and **down arrow** keys to set the key color level.

Note: Daktronics does not recommend changing the key color after setting it. The VIP-4400 supports 256 intensity levels for each color (0-255). The default setting is Green 247 (Red 0, Green 247, Blue 0). Create sequences with key color in mind and use only that color for sequences overlaid on the video.
 14. Navigate to the **Input** menu and select the next video input (Channels 2-4). Repeat steps 3-13 to adjust position or color settings for each input. Save settings after making adjustments.

3.2 Changing the Data Source

After the **V7 V-Link Controller** dialog box opens, as shown in **Figure 7**, video immediately displays on the default sign. Before an event, change the data source to the DMP-7000 controller. To change the data source, follow the steps below:

1. Click the **drop-down arrow** next to **Data Source** and select **Venus**, or press **Alt-A** and use the **up** and **down arrows** to select **Venus**.

Note: If the sign to control does not display in the **Sign** box, click in the **Sign** box and use the **up** and **down arrows** to select the correct sign.
2. Click the **drop-down arrow** next to **V-Link Index** to select the desired VIP-4400, or press **Alt-X** and use the **up** and **down arrows** to select the desired video processor.
3. Click the **drop-down arrow** next to **VLink Channel** to select the desired output channel, or press **Alt-C** and use the **up** and **down arrows** to select the output channel. Each VIP-4400 outputs four channels.
4. Click the **drop-down arrow** next to **Input** to select the desired input, or press **Alt-I** and use the **up** and **down arrows** to select the input channel.
5. Click inside the **Position Settings** text box and select the desired settings for this input or press **Alt-P** and use the **up** and **down arrows** to select the position settings.
6. Click inside the **Color Settings** text box to select the desired color settings for this input setting or press **Alt-C** and use the **up** and **down arrows** to select the settings.
7. Click inside the **Data Source** text box and choose **Video** when ready to play video on the display, or press **Alt-A** and use the **up** and **down arrows** to select **Video**.

Note: If the monitor window is open, no video will play on the display because the video does not send to the computer; the Venus® software data continues to play on the monitor.

8. Click the **drop-down arrow** next to **Input** to select a different input, or press **Alt-I** and use the **up** and **down arrows** to select a new input.
9. Click inside the **V-Link Index** text box to select a different **VIP-4400** from the drop-down menu, then select the desired **Input** from the **Input** drop-down menu.
10. Click the **drop-down arrow** next to **Data Source** and click **Venus** to return to the box showing DMP sequences, or press **Alt-A** to move the cursor to the **Data Source** text box and use the **up** and **down arrows** to select **Venus**.
11. Click the **drop-down arrow** next to **Data Source** and then click **Overlayered** to go to **Overlay Mode**, or press **Alt-A** to move the cursor to the **Data Source** text box and use the **up** and **down arrows** to select **Overlayered**. Refer to **Figure 9**.

Note: **Overlay Mode** allows for the display of any desired Venus® sequences. Once a sequence with the key color displays, video plays inside the key color area.

12. Click **Close** to close the dialog box when finished.

Note: Spend time practicing the various functions such as switching between video sources and inputs.

Section 4: Configuration Using Tera Term Software

Initial configuration and property edits of the VIP-4400 are typically accomplished using Venus® 7000 software, however the Tera Term program provides another method for entering the same parameters. The Tera Term software offers the GC (Get Configuration) command which produces a readout of current settings used for troubleshooting.

4.1 Using Tera Term Software

To configure the VIP-4400 using Tera Term software, follow the steps below:

1. Link the VIP-4400 DB-9 connector port to an open COM port on the Venus® 7000 control computer with a serial cable. The DB-9 port on the VIP-4400 console is immediately to the left of the V-Max™ 4 input port. Refer to **Figure 11**.



Figure 11: DB-9 Port

Note: Ensure the VIP-4400 is turned on and Venus® 7000 sign service is stopped.

2. Open the Tera Term program and go to **Setup > Serial Port**. The **Serial port setup** window opens.
3. Enter the COM port on the DMP-7000 connected to the VIP-4400 in the **Port** field. Refer to **Figure 12**.

4. Enter the following port settings:

- Baud rate: **115,200**
- Data: **8 bit**
- Parity: **none**
- Stop: **1 bit**
- Flow control: **none**

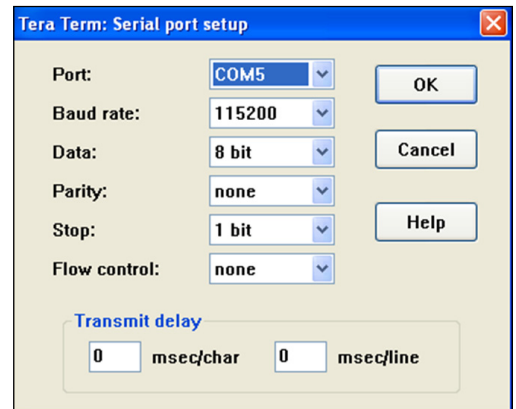


Figure 12: COM Properties Box

4.2 Initial Setup

Configuration parameters needed to run the VIP-4400 for the first time can be entered directly from the Tera Term window. The configuration example shown in **Figure 13** on Page 11 lists commands for configuring a 720x1280 display with one video input. Refer to **Section 6** for a list of all available commands and their key combinations.

Parameter Example	Description
SI 41	Video Input Selection <ul style="list-style-type: none"> • 31 and 32 set VGA. • 41–44 set SDI. • 51 and 52 set DVI.

Parameter Example	Description
VA 0 0 720 1280	<p>Viewable Area</p> <ul style="list-style-type: none"> The first 0 indicates the vertical start location. The second 0 indicates the horizontal start location. 720 sets the pixel height the VIP-4400 controls. 1280 sets the pixel width the VIP-4400 controls.
WA 0 0 480 640	<p>Window Area</p> <ul style="list-style-type: none"> The first 0 indicates the vertical start point of the window. The second 0 indicates the horizontal start point of the window. 480 sets the value for the window height. 640 sets the value for the window width.
VB 128	<p>Video Brightness</p> <ul style="list-style-type: none"> 128 sets the video brightness level. The default value is 128. The range is 0–255. Zero is full black and 255 is full white.
VC 64	<p>Video Contrast</p> <ul style="list-style-type: none"> 64 sets the video contrast level. The default value is 64. The range is 0–127.
VH 128	<p>Video Hue</p> <ul style="list-style-type: none"> 128 sets the video hue. The default value is 128. The range is 0–255.
VS 64	<p>Video Saturation</p> <ul style="list-style-type: none"> 64 sets the video saturation level. The default value is 64. The range is 0–127. Zero is full black and 127 is completely saturated.
SS I	<p>Source Selection</p> <ul style="list-style-type: none"> I sets the data type to Video. V sets the DMP-7000 as the data source. O selects Overlay which displays DMP-7000 data over video signal.
CS 744 1280	<p>Display Size</p> <ul style="list-style-type: none"> 744 sets the height in pixels. 1280 sets the width in pixels.
SP 26 1 744 1280	<p>Absolute Sign Position</p>
DD 63	<p>Display Dimming</p> <ul style="list-style-type: none"> The default value is 127. The range is 0–127.
DG 22	<p>Display Gamma</p> <ul style="list-style-type: none"> 22 sets the data distributor gamma value. The range is 10–41 which is 1.0 to 4.1.

Check that all other parameters are set as shown in **Figure 12**. Refer to **Figure 13** for an example of Tera Term configuration.

Note: Enter **CS F** to save the settings. To avoid losing these settings, do not power the VIP-4400 off and on.

```
i>
i>gc
CH 1
SI 41
EB 1
UA 0 0 720 1280
UA 0 0 720 848
AA 0 0 720 848
FI 256
UB 128 128 128
UC 64 64 64
UH 128
US 64
FU 5
FH 5
FF 0
SK 0 247 0
DE 0 0
NR 0 0 0
BC 0 0 0
BI 0
BE 0
AR ANA
MD 1
MI 3
FD v
FI 3
DM a

BS 26 1 720 848
FG 1280 358 26 745 750 0
FGC 0 247 0
SU 1 1 1 1
AU 256
UK 0 247 0
KR 10
KS 0
UF A
XD 0
SS 1
ZO 1 2 3 4 0
AI 17449
PS 0 0 0 0 32 0 0 0 0
IL 0 2 2
ILM 4000000000000000
CK 0
CKL 64 960

UY 59.94
SM 0
CS 720 848
SP 26 1 720 848
CT 11
DF FFFF
DD 63 63 63 63 63 63 63 63 63 63 63 63 63 63 63
MG 0
DG 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22
DX 32767 0 0 0 32767 0 0 0 32767

OK
i>
```

Figure 13: Sample Configuration

Section 5: Configuration Using V-Tour® Software

Initial configuration and property edits of the VIP-4400 are typically accomplished using Venus® 7000 software, however the V-Tour® program provides another method for entering the same parameters.

5.1 Using V-Tour® Software

To configure the VIP-4400 using V-Tour® software, follow the steps below while referring to **Figure 14** and **Figure 15**.

1. Enter the name of the VIP in the **Name** text box. When the configuration uses more than one VIP-4400, use descriptive names to avoid confusion (e.g. VIP, Left VIP, Right VIP).
2. Choose **Network** or **Serial** in the **Communications** box.
 - If **Network** is chosen, enter the corresponding IP address.
 - If **Serial** is chosen, select the **Port** from the drop-down list.

Note: The port must be different from the port selected in the **Display** window.



Figure 14: New Network VIP-4400

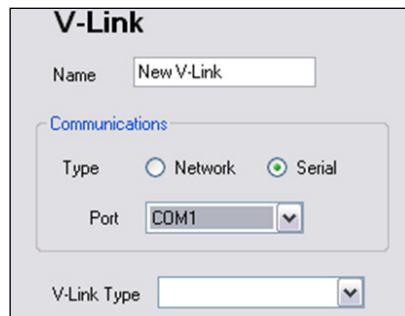


Figure 15: New Serial VIP-4400

3. Choose **VIP4500/VLink4500** from the **V-Link Type** drop down list. Refer to **Figure 16**.

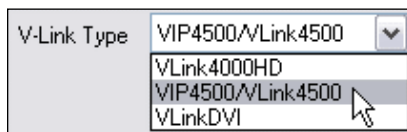


Figure 16: V-Link Type Selection

4. Click **Next**. The **Summary** window opens.

5.2 Summary Window

The **Configuration Wizard Summary** window provides an overview of information entered in the **Display** and **V-Link** windows. Refer to **Figure 17** on the next page.

Note: If the options listed in the **Summary** window are incorrect, click **Previous** to adjust.

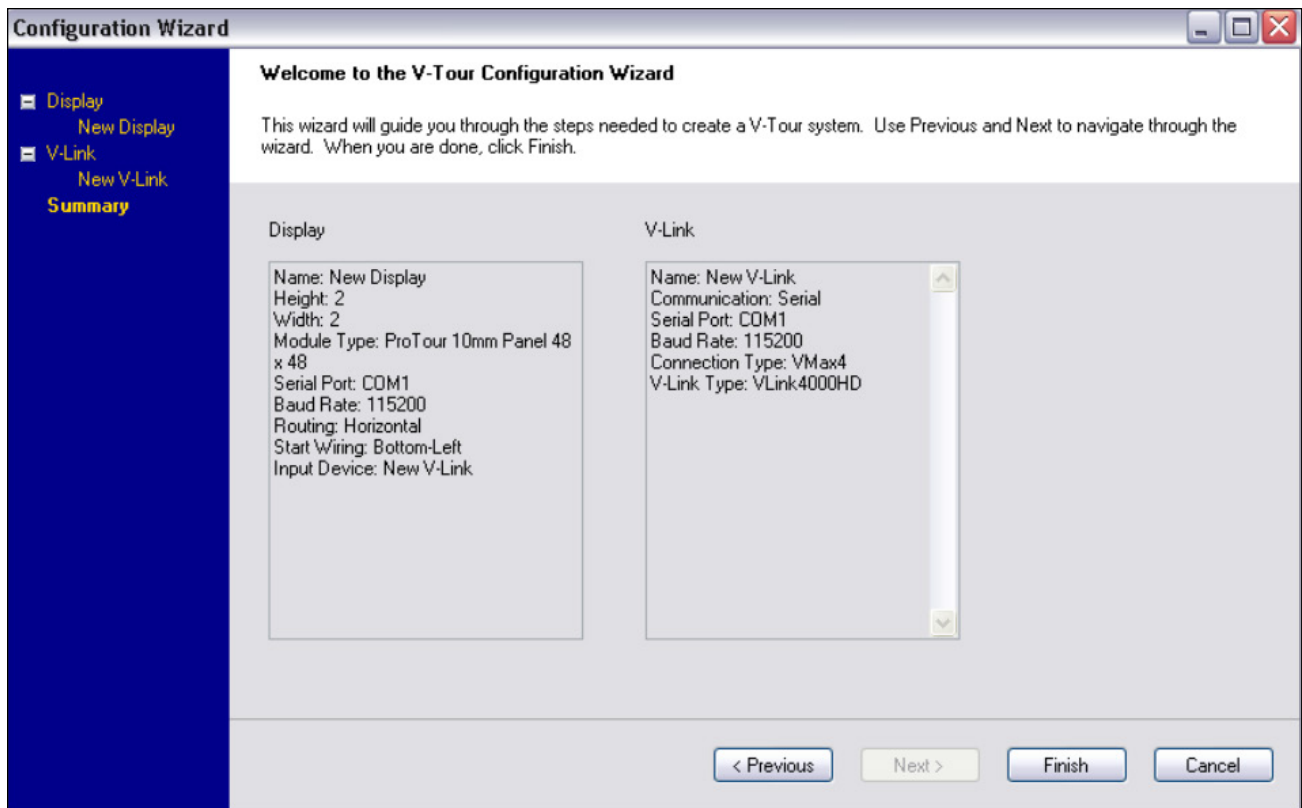


Figure 17: Configuration Wizard Summary Window

If the information in the **Summary** window is correct, follow the steps below:

1. Click **Finish**. The **Send Configuration** dialog box opens. Refer to **Figure 18**.
2. Click **Yes**.
3. Select **Import System Configuration** from the **File** menu.
4. Select the appropriate *.vcd file from the **Open** window.
5. Click **Open**.

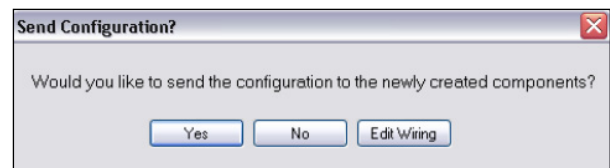


Figure 18: Send Configuration Confirmation Box

Saving Display Configuration Settings

1. Select **Export System Configuration** from the **File** menu. Refer to **Figure 19**.
2. Name the display configuration in the **Save** window and verify that the default file extension is *.vcd.
3. Click **Save**.

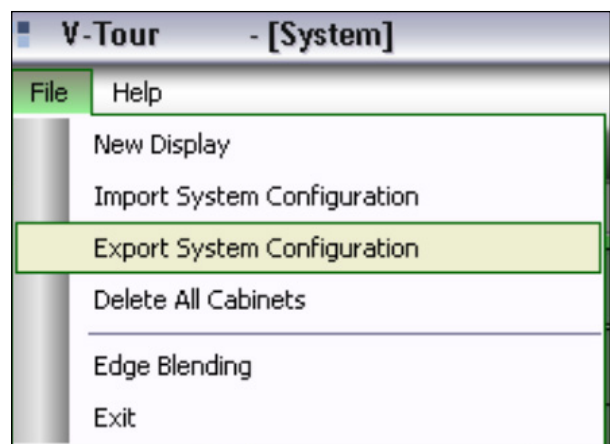


Figure 19: Export System Configuration Menu

Section 6: Advanced Operation

This section describes advanced VIP-4400 operations. It is recommended that users perform these operations only under the supervision of Daktronics Technical Support.

6.1 Creating a Backup Configuration File

A .VLC file functions as a backup configuration file external to the VIP-4400. Create .VLC files after completing the initial setup or after changing the configuration. To create a backup configuration file, follow the steps below:

1. Open the Venus® 7000 Shell.
2. Click the VLink button in the bottom-right corner. Refer to Figure 20.
3. Select the sign connected to the VIP-4400 from the Sign drop-down menu. Refer to Figure 21.

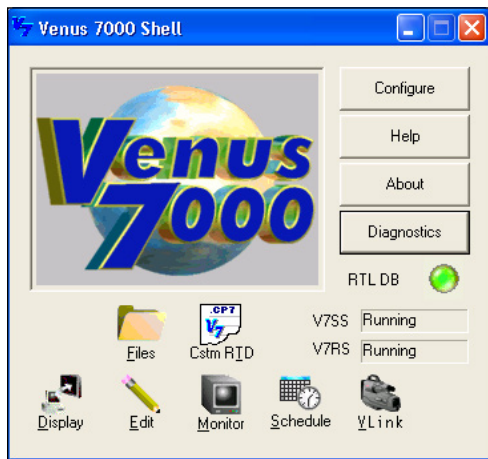


Figure 20: Venus® 7000 Shell

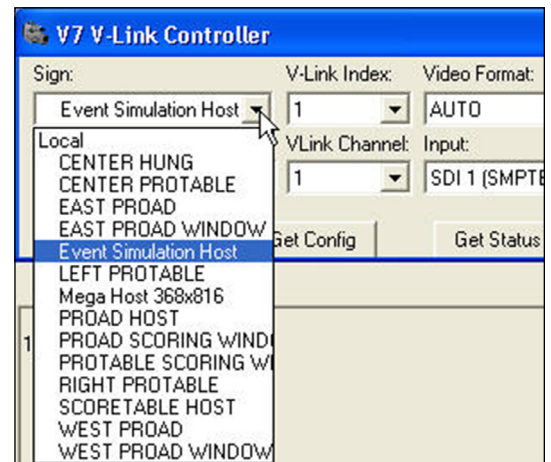


Figure 21: Selecting Sign

4. Confirm the VLink Channel field is set to 1, and click the Details button. Refer to Figure 22.

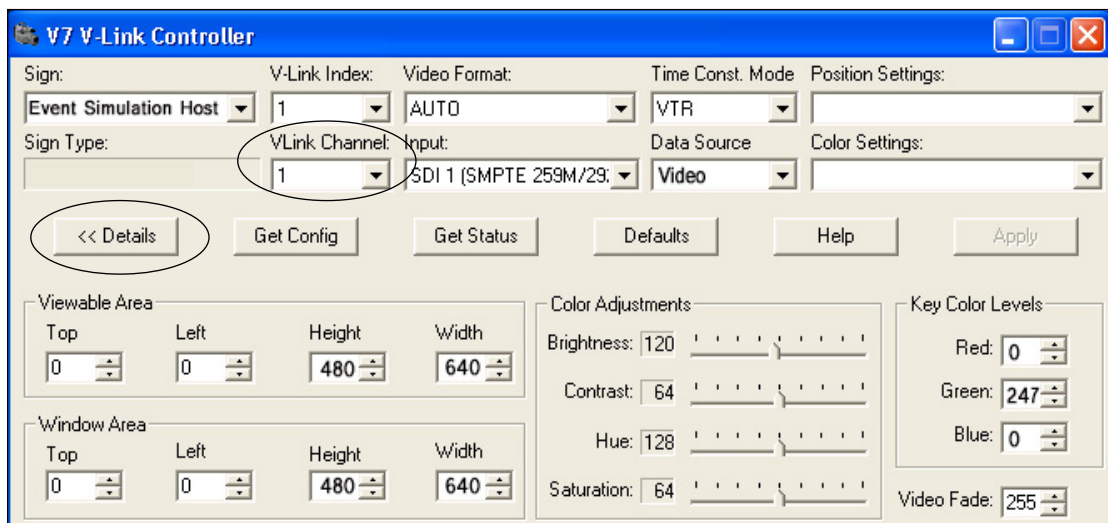


Figure 22: Verifying VLink Channel

- Click the **Save Configuration Settings** button in the bottom-left corner. Refer to **Figure 23**.

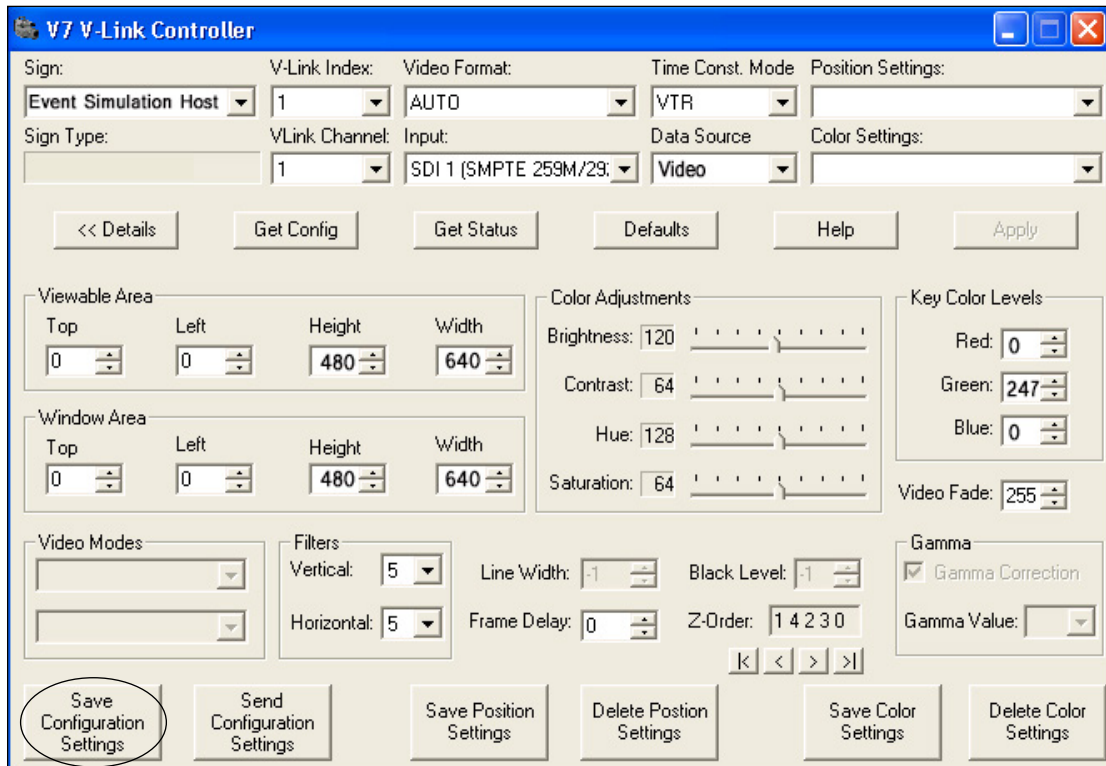


Figure 23: Save Configuration Settings

- Type the name of the .VLC file in the **File name** text box and click **Save**.

Note: Choose a descriptive name for the .VLC file that describes its corresponding VIP-4400 and channel. It is also recommended to include the date. For example, a .VLC file for Channel 1 on a VIP that controls the left half of the display might be named **Left_CH1(5-19-15).VLC**. Refer to **Figure 24**.

- Repeat Steps 4–6 for each channel of the VIP-4400.

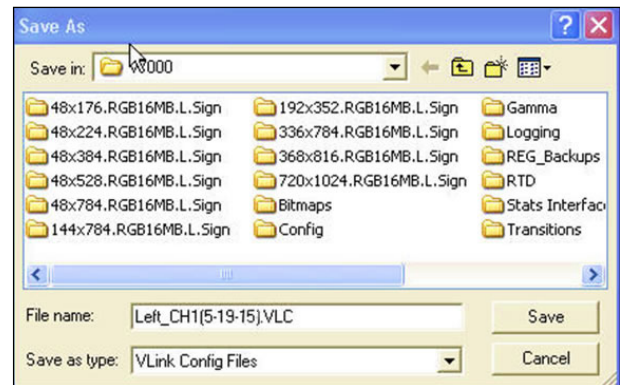


Figure 24: Saving .VLC File

6.2 Creating a Backup Script File

Follow the instructions below to create a backup script for the VIP-4400. For additional information refer to **DD1834905 DMP-7000 Installation and Setup Manual**.

- Follow the instructions in **Section 6.1** to create the necessary .VLC files before proceeding.
- On the **V7Dsply - Scripting** window, right-click on an unused cell and select **Edit Cell**. Refer to **Figure 25**.

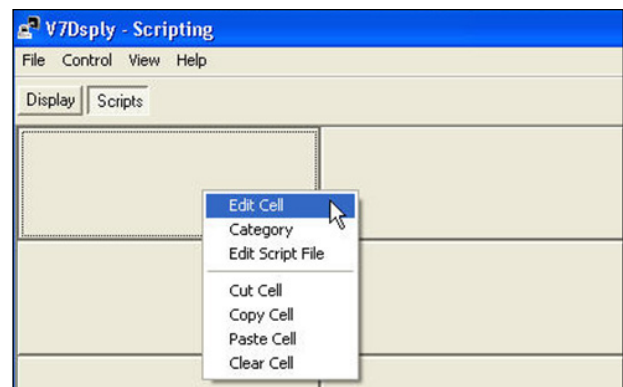


Figure 25: Editing Cell

3. Enter the name of the desired script file or name a new one in the **Select Script File** pop-up window and click **OK** to continue. Refer to **Figure 26**. This example uses the name **backup**.
4. Right-click on the cell described in Step 2 and select **Edit Script File** to open the **Edit Script** window. Refer to **Figure 27**.

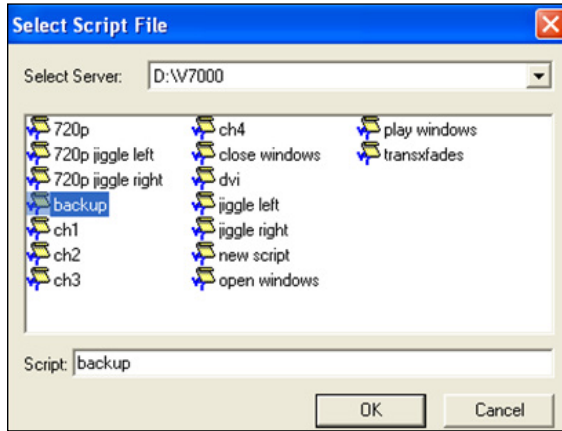


Figure 26: Selecting Script File

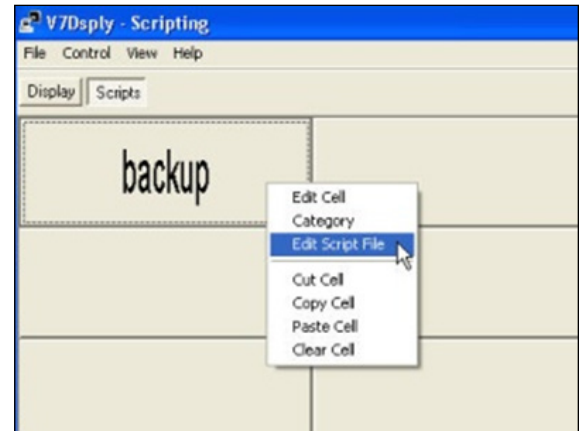


Figure 27: Editing Script File

5. Click **Add Line** to create a scripting line. Refer to **Figure 28**.
6. Select the scripting command **VLSendConfig File**, then click **Next**. Refer to **Figure 29**.

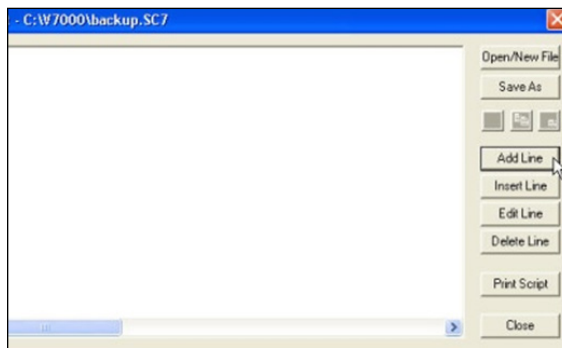


Figure 28: Creating Scripting Line

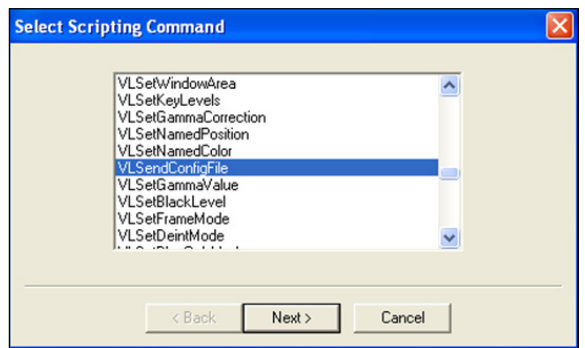


Figure 29: Selecting Command

7. Click **Select Sign** to select the sign connected to the VIP-4400, then click **Next**. Refer to **Figure 30**.
8. Click **Select Path** to navigate to the location of the .VLC file created for Channel 1 and then click the **Next** button. Refer to **Figure 31**.

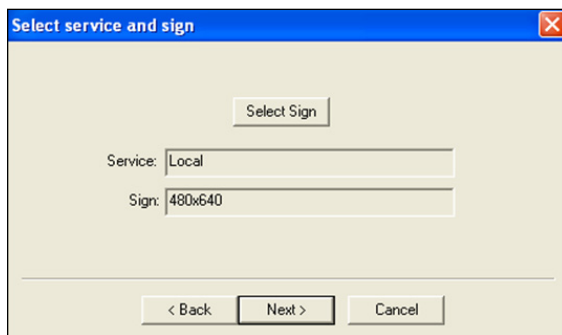


Figure 30: Selecting Sign

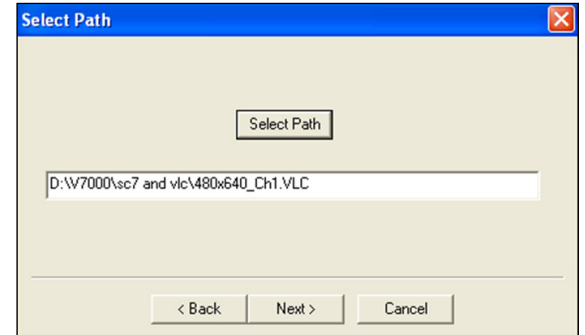


Figure 31: Navigating to .VLC File

9. Select the appropriate VIP-4400 index and channel numbers. In the example shown in **Figure 32**, the Index is **1** and the Channel is **1**. Click **Next**; the **Verify Scripting Command** window opens.
10. Confirm that the script is correct and then click **Finish** to create the scripting command and return to the **Edit Script** window. Refer to **Figure 33**.

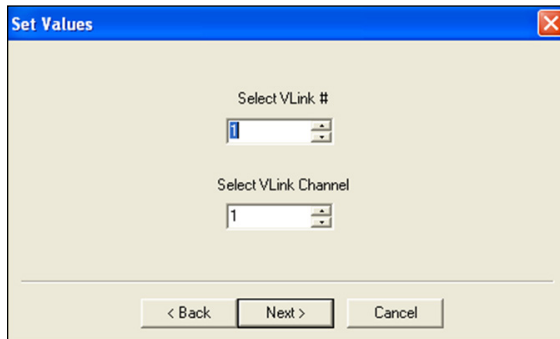


Figure 32: Setting Values

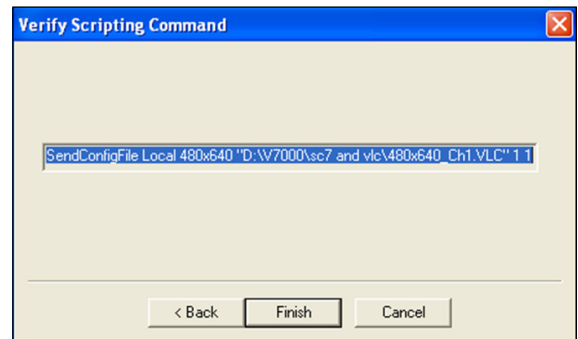


Figure 33: Verifying Scripting Command

11. Repeat Steps 4-10 to add more channel configurations.
12. Navigate to the .VLC file location created in Step 10 and open it as a .TXT file in Notepad.
13. Erase all the current settings and replace them with **CF S**. Refer to **Figure 34**.
14. Click **File > Save As** and enter "**CF S.VLC**" into the **File Name** text box. Include the quotation marks as this ensures that the file saves as a .VLC file. Refer to **Figure 35**.

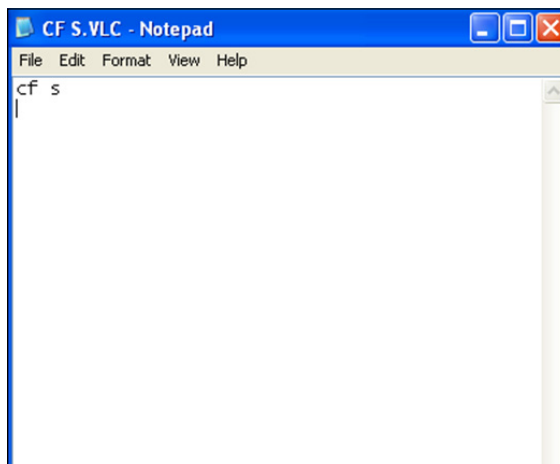


Figure 34: Replacing Settings

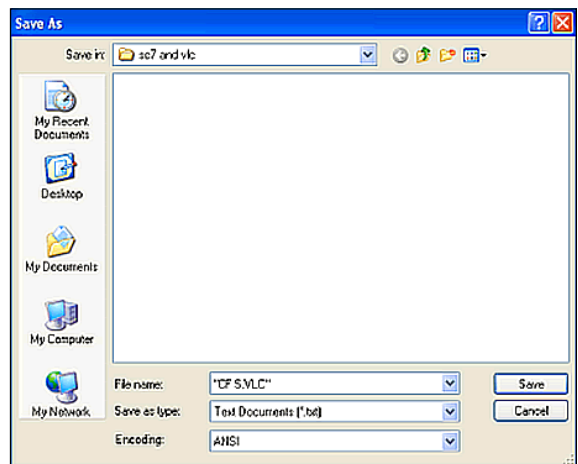


Figure 35: Saving as .VLC

15. Repeat Steps 4-10, this time adding the CF S.VLC file to the script. When run, this scripting line will save the configuration on the VIP-4400. Refer to **Figure 36**.

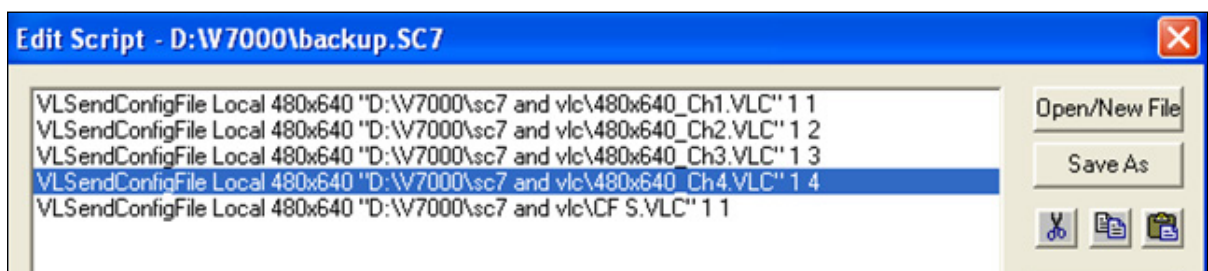


Figure 36: Saving Configuration

6.3 Resetting to Factory Defaults

Certain issues require resetting the VIP-4400 to its factory defaults. This action should be taken with caution as resetting the VIP-4400 removes any existing configuration and may cause issues with displaying content.

The following actions should be taken before resetting the VIP-4400:

- Locate the backup configuration settings and save them as a new file. Typical locations include Venus® 7000 scripts or command frames, as well as .VLC files. Refer to **Section 6.1**. In the absence of a functional configuration backup, the configuration must be re-entered manually.
- Confirm that the display is blanked with no video output going to the display.
- Bypass the VIP-4400 to verify the V-Max™ 4 signal works correctly.
- Ensure functionality of inputs via VIP-4400 web monitoring.

Note: If web monitoring is unavailable, do not reset the VIP-4400.

- Verify the system configuration and display are working correctly by switching to the backup system (if available).

To reset the configuration to factory defaults, follow the steps below:

1. Navigate to the **Start** menu in **Programs > Venus 7000 > Venus 7000 Tools > V7 VLink Debug**.
2. Open the **V7 VLink Debugger** program. For more information on the V7 VLink Debugger program, refer to the **DD1834905** DMP-7000 Installation and Setup Manual
3. Type **XRD** in the **Command** text box and click **Send Command** to delete all configuration settings and restart the VIP-4400. Refer to **Figure 37**.
4. Wait one minute to allow the VIP-4400 to reboot, then type **XR** into the **Command** text box and click **Send Command** again.
5. Allow a minute for the VIP to reboot, then click **Enter** while the cursor is in the **VLink Debugger Command** box. When **1>** appears in the readout window, the VIP has completed the reboot. Refer to **Figure 38**.

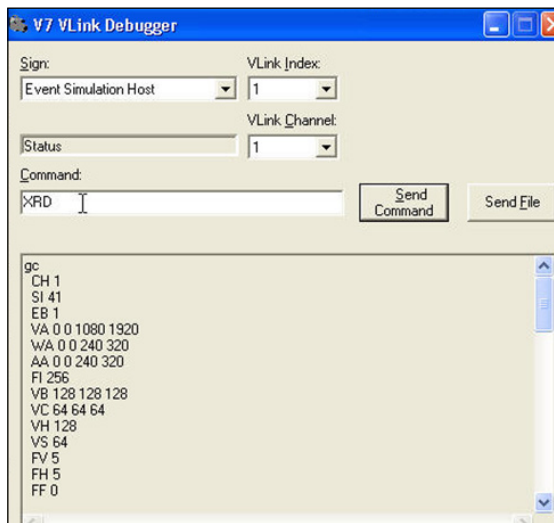


Figure 37: Entering XRD Command

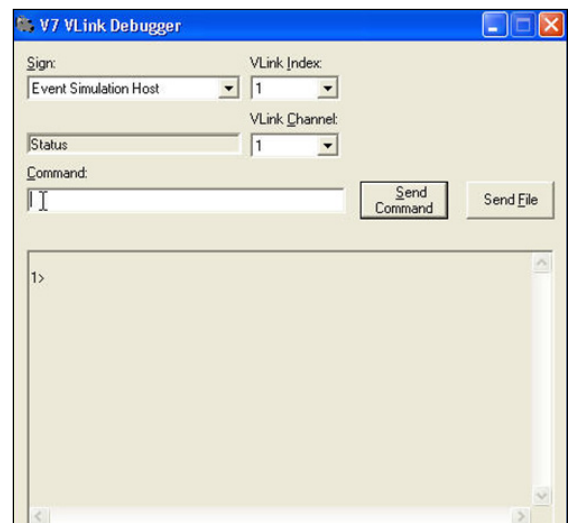


Figure 38: Completed Reboot

6. Reload the configuration settings.

- If the settings are in a Venus® 7000 script file or command frame, run the file.
- If the settings are in .VLC file format for each VIP-4400 channel, follow the steps below:
 - a. Click the **VLink** button in the bottom-right corner of the **Venus® 7000 Shell**. Refer to **Figure 39**.
 - b. Select the sign connected to the VIP-4400 in the **Sign** drop-down box. Refer to **Figure 40**.

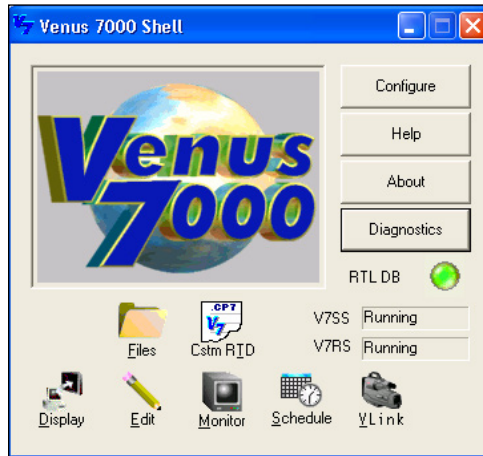


Figure 39: Venus® 7000 Shell

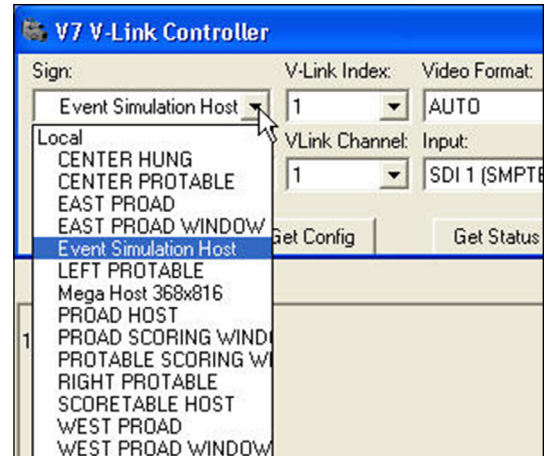


Figure 40: Selecting Sign

- c. Confirm the **VLink Channel** is set to 1 and click **Details**. Refer to **Figure 41**.

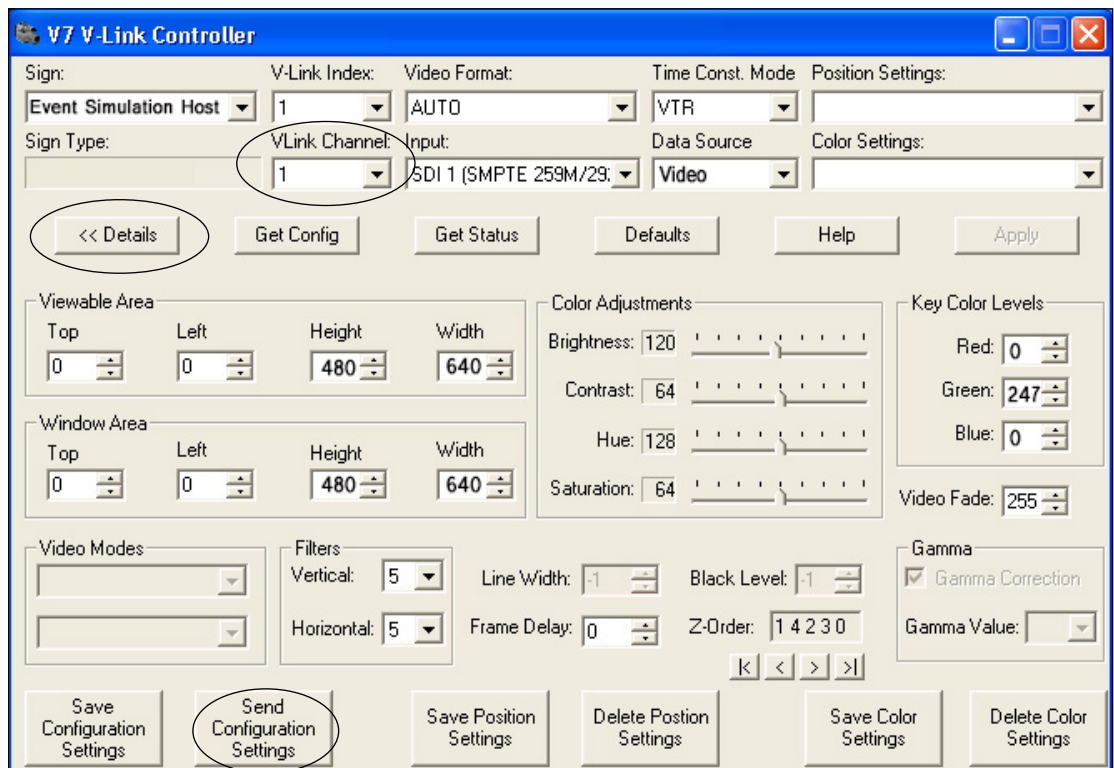


Figure 41: Configuration Settings

- d. Click **Send Configuration Settings** on the bottom-left. Refer to **Figure 41**.

- e. Navigate to the .VLC file location and load the configuration for Channel 1 by selecting a file and clicking **Open**. Refer to **Figure 42**.
- f. Click **OK** after the **VLink Configuration** window opens. Refer to **Figure 43**.
- g. Repeat Steps a–f for V-Link Channels 2–4.

Note: If no functional configuration backup is available, the configuration must be re-entered manually.

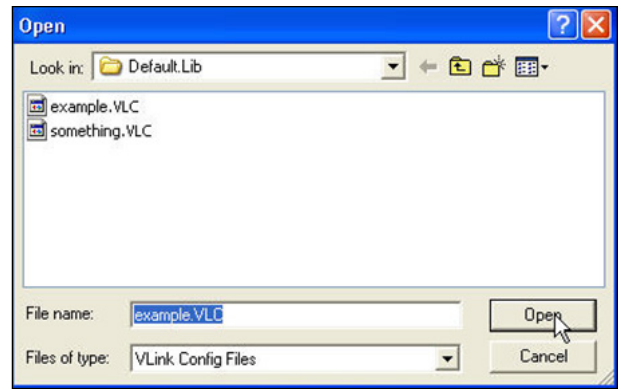


Figure 42: Loading Configuration

- 7. Save the configuration on the VIP-4400 by entering **CF S** in the **V7 VLink Debugger Command** box and create a backup configuration if not done previously. Refer to **Figure 44**.

Note: The **CF S** command only needs to be entered once to save all four channel configurations.

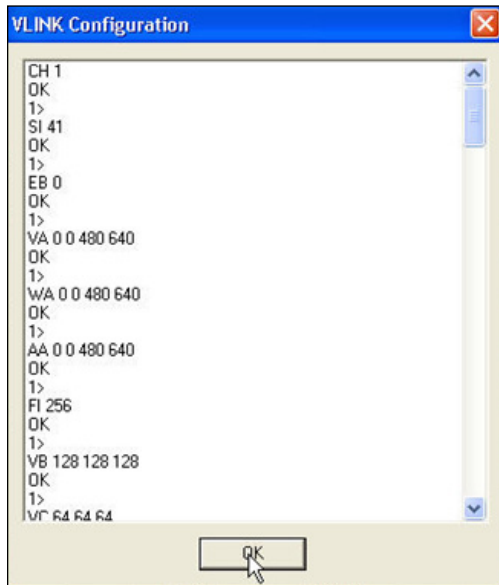


Figure 43: Configuration

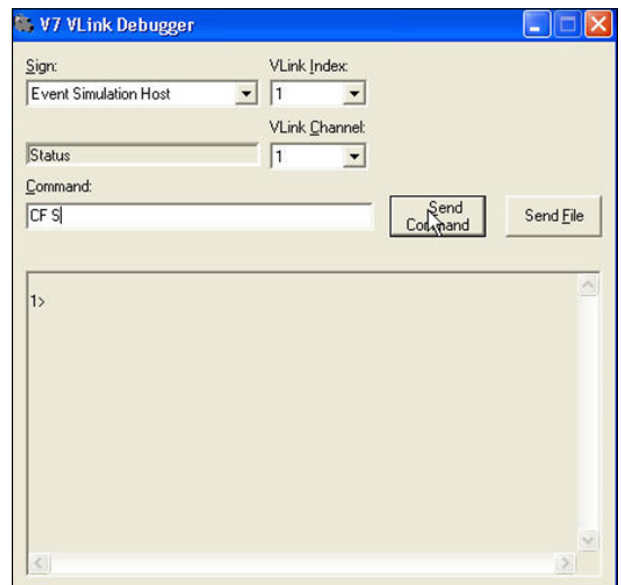


Figure 44: Saving Configuration

- 8. Test the configuration of the site under a normal operation scenario. Contact an on-site operator for help running this test.

Section 7: VIP-4510 Converter

The VIP-4400 has a built-in component that sends the processor output to a confidence monitor. This component, known as the VIP-4510 converter or Mini V-Xport™ converter, supports the following standards: S-Video, HD-SDI, VGA, and DVI. Refer to Figure 45.

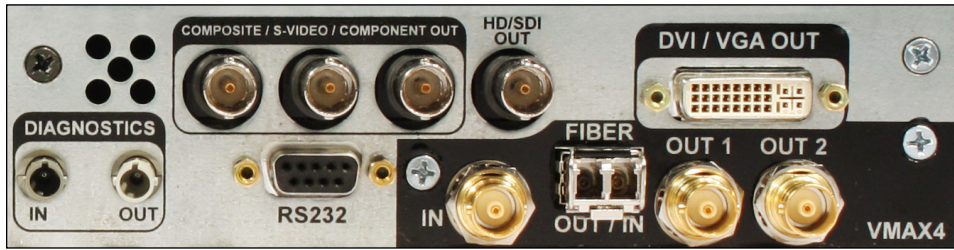


Figure 45: VIP-4510 Converter

7.1 Basic Setup

The VIP-4510 can be configured after determining the size of the display that the VIP-4400 is controlling and the desired output resolution. Three parameters must be configured: viewable area (VXVA), window area (VXWA), and video format (VXVF).

To check these parameters, follow the steps below:

1. Navigate to the V7 VLink Debugger program.
2. Type **VXGC** into the V7 V-Link Debugger program to view the current configuration settings. Refer to **Figure 46**.

The viewable area should be set to the same size as the LED display, and the window area should be the same as the monitor resolution. The video format should be set as the correct format for the VIP-4510 converter to output on the monitor.

Note: The pixel boundaries should be divisible by eight for both rows and columns.

In the example in **Figure 46** the viewable area (VXVA) is set to preview a display that is 720x848 pixels. If the display is an HD display, the width of the VXVA must be half of the configured sign width. The window area (VXWA) is set for the output video to start at 0 pixels from the top of the output signal and 0 pixels from the left with a size of 768x1024 pixels. The video format (VXVF) is set to XGA. Refer to **Section 9.8** for a list of VIP-4510 video formats.

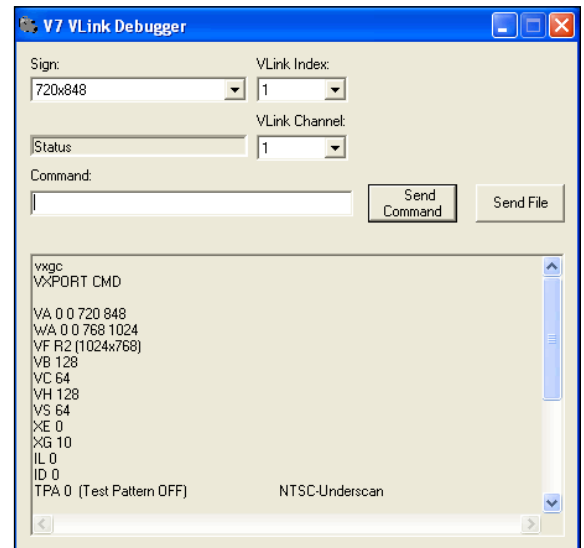


Figure 46: Configuration Settings

Section 8: Web Page Navigation

The web pages hosted on the VIP-4400 allow the user access to the VIP-4400 configuration settings, video source, status reports, and firmware changes. Input sources and channel outputs also may be monitored through the web page. The VIP-4400 web page requires a network connection and a static IP address to function. The static IP address and the network net mask need to be configured only once and then saved on the VIP-4400.

8.1 VIP-4400 Web Page

To access the web interface, type the VIP-4400's IP address into the internet browser. This opens the main web page. Refer to **Figure 47**.

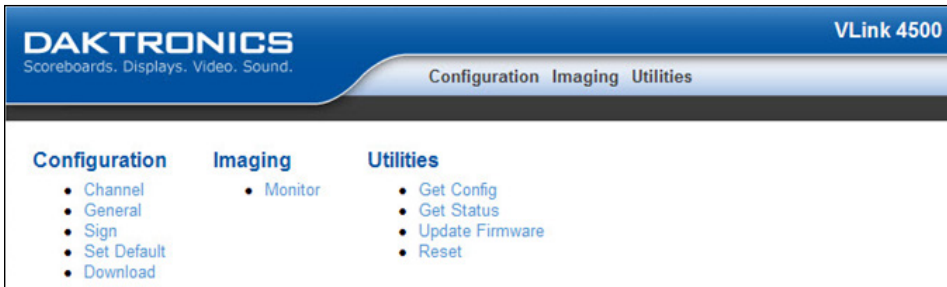


Figure 47: VIP-4400 Web Page

8.2 Configuration Tab

The **Configuration** tab provides access to advanced configuration settings. It contains five sub-tabs: Channel, General, Sign, Set Default, and Download.

Channel

The **Channel** sub-tab allows the user to set the video input source, viewable area, window area, alpha control, brightness, contrast, hue, saturation, and sharpness filter. Refer to **Figure 48**.

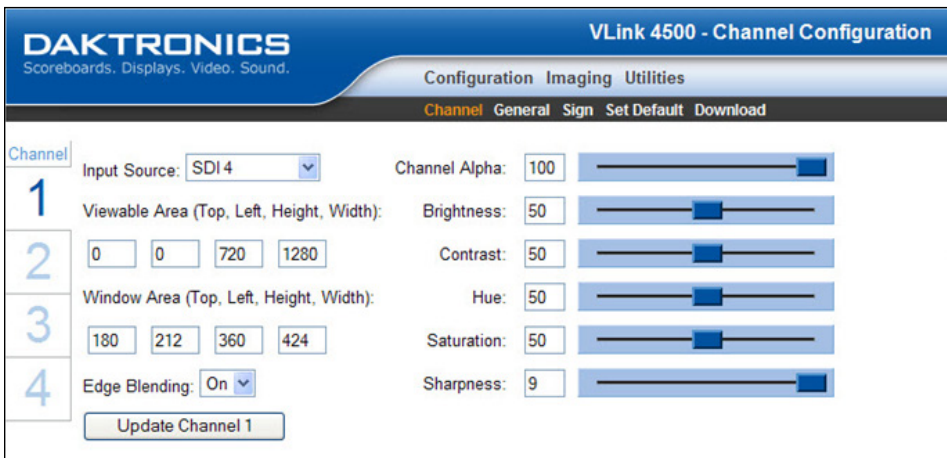
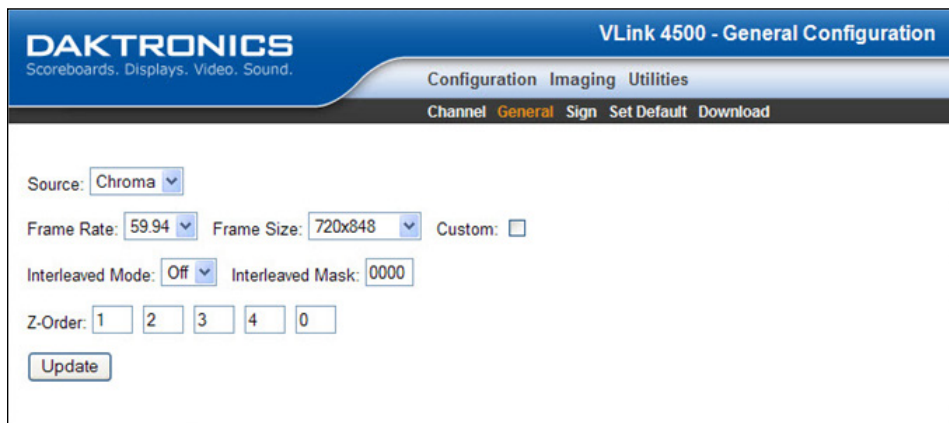


Figure 48: Channel Configuration

General

The **General** sub-tab allows the user to set the V-Max™ 4 frame rate, V-Max™ 4 frame size, interleave mode, interleave mask, and Z-order. Refer to **Figure 49**.



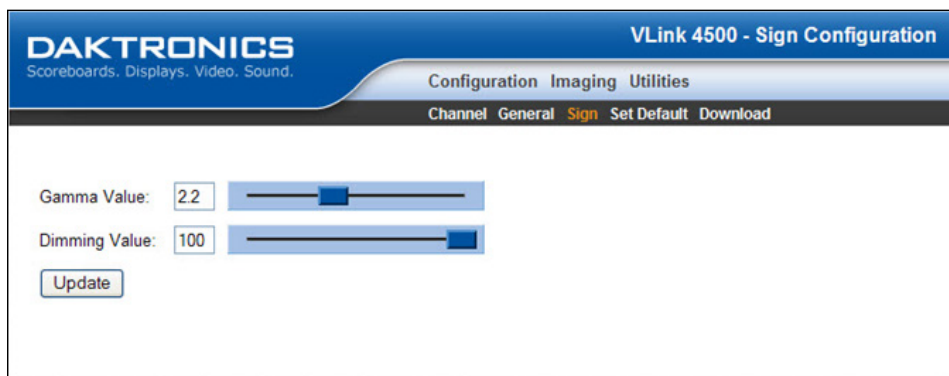
The screenshot shows the 'VLink 4500 - General Configuration' web page. The header includes the DAKTRONICS logo and navigation tabs for 'Configuration', 'Imaging', and 'Utilities'. The 'General' tab is selected. The main content area contains the following settings:

- Source: Chroma (dropdown menu)
- Frame Rate: 59.94 (dropdown menu)
- Frame Size: 720x848 (dropdown menu)
- Custom:
- Interleaved Mode: Off (dropdown menu)
- Interleaved Mask: 0000 (text input)
- Z-Order: 1, 2, 3, 4, 0 (radio buttons)
- Update (button)

Figure 49: General Configuration

Sign

The **Sign** sub-tab allows the user to adjust the sign by setting the gamma control and dimming control. Refer to **Figure 50**.



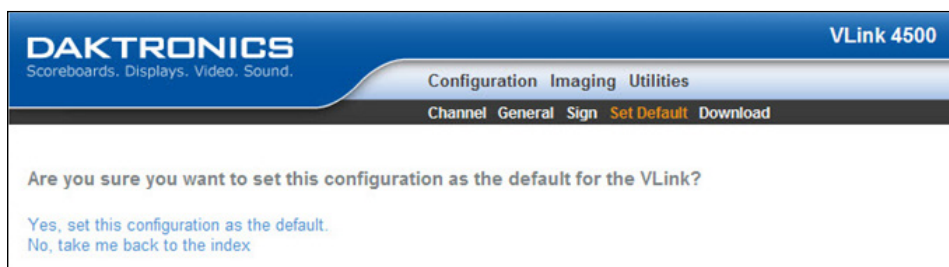
The screenshot shows the 'VLink 4500 - Sign Configuration' web page. The header includes the DAKTRONICS logo and navigation tabs for 'Configuration', 'Imaging', and 'Utilities'. The 'Sign' tab is selected. The main content area contains the following settings:

- Gamma Value: 2.2 (text input) with a slider control
- Dimming Value: 100 (text input) with a slider control
- Update (button)

Figure 50: Sign Configuration

Set Default

The **Set Default** sub-tab allows the user to save the current VIP-4400 configuration settings as the default. Refer to **Figure 51**.



The screenshot shows the 'VLink 4500 - Set Default Configuration' web page. The header includes the DAKTRONICS logo and navigation tabs for 'Configuration', 'Imaging', and 'Utilities'. The 'Set Default' tab is selected. The main content area contains the following text:

Are you sure you want to set this configuration as the default for the VLink?

Yes, set this configuration as the default.
No, take me back to the index

Figure 51: Set Default Configuration

Download

The **Download** sub-tab allows the user to download a Venus® 7000 .VLC file containing configuration settings for all four VIP-4400 channels. Refer to **Figure 52**.

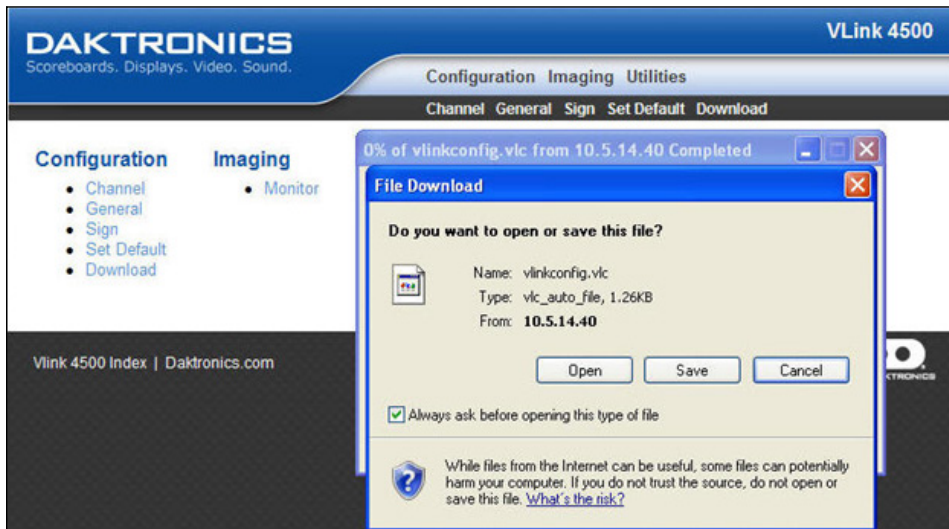


Figure 52: Download Configuration

8.3 Imaging Tab

The **Imaging** tab displays an image of the selected video source, channel, or incoming/outgoing V-Max™ 4 signal. Refer to **Figure 53**.

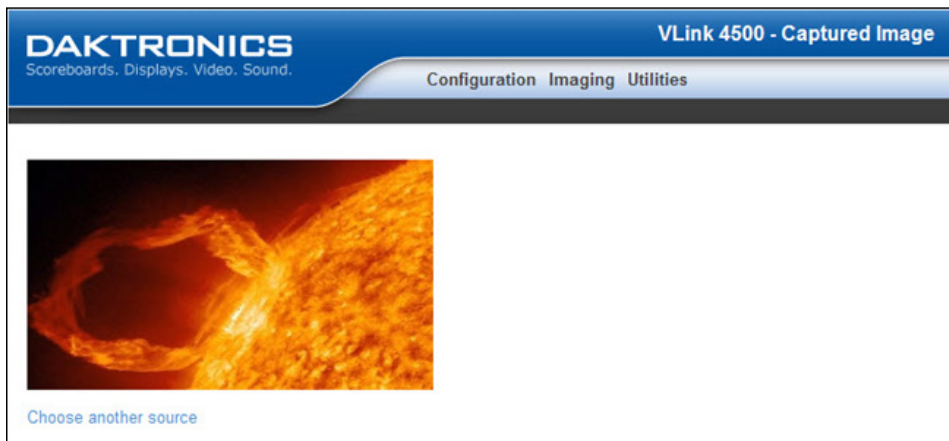


Figure 53: Video Source Capture

Monitor

The **Monitor** sub-tab allows the user to choose a different video source to capture. Refer to **Figure 54**.

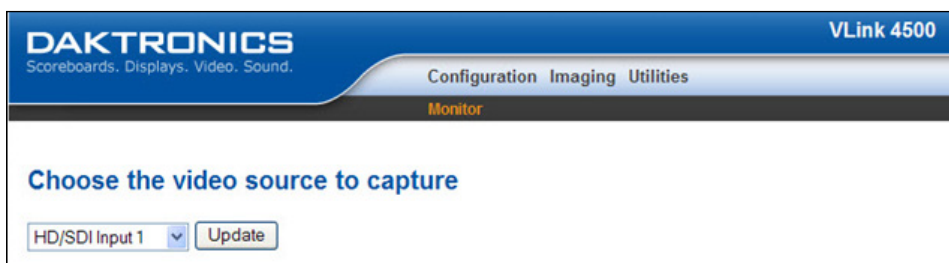


Figure 54: Choosing Video Source

8.4 Utilities Tab

The **Utilities** tab provides access to status reports and allows firmware changes. It contains four sub-tabs: Get Config, Get Status, Update Firmware, and Reset.

Get Config

The **Get Config** sub-tab reports the current configuration of the selected channel. Refer to **Figure 55**.

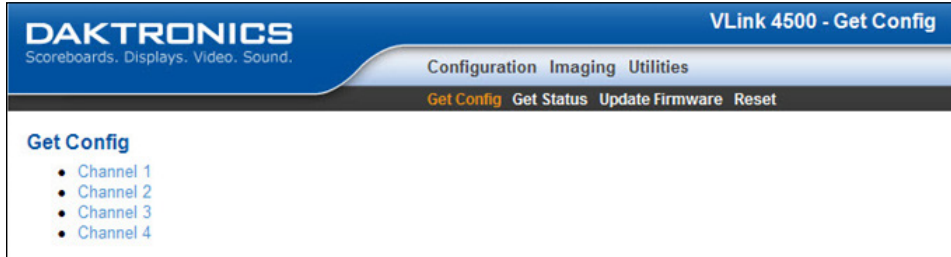


Figure 55: Get Config Utility

Get Status

The **Get Status** sub-tab reports the current status and resolution of the incoming video signals and processor channels. Refer to **Figure 56**.

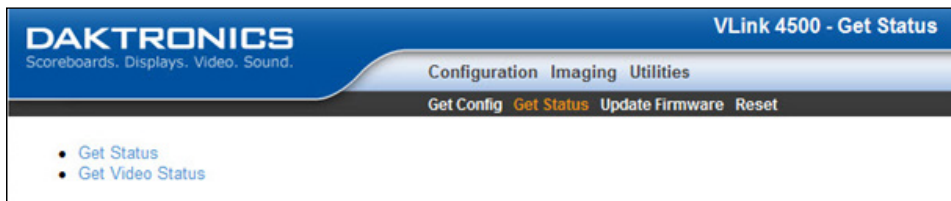


Figure 56: Get Status Utility

Update Firmware

The **Update Firmware** sub-tab allows the user to update firmware on the VIP-4400. Refer to **Figure 57**.

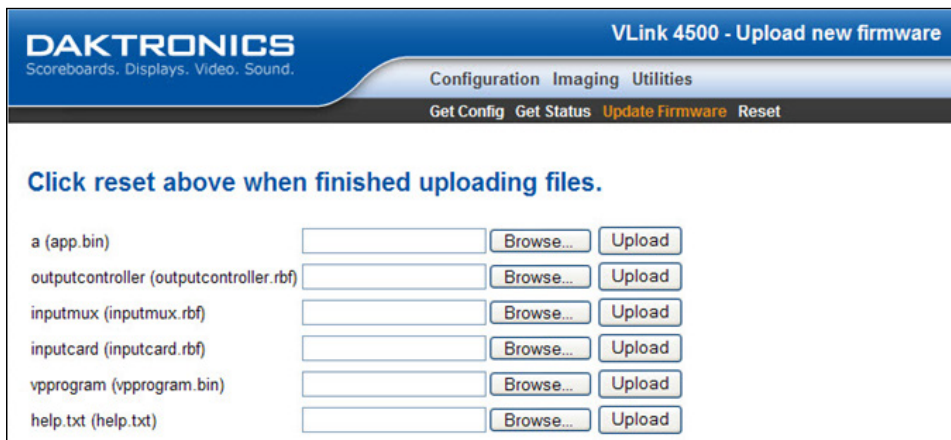


Figure 57: Update Firmware Utility

Reset

The **Reset Utility** sub-tab allows the user to reset the VIP-4400 from the Internet and performs an XR command. Refer to **Figure 58**.

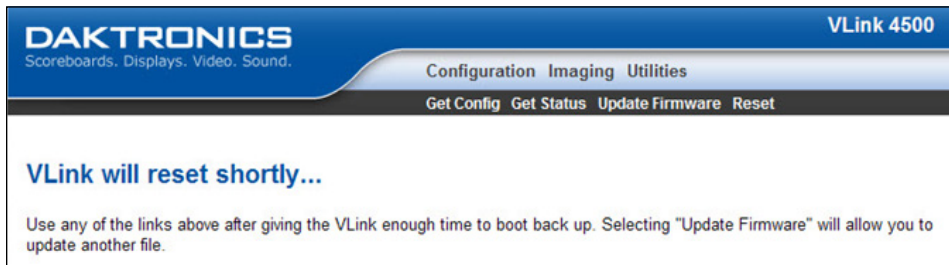


Figure 58: *Reset Utility*

Section 9: Command Reference

9.1 Channel-Specific Commands

Command	Description	Definition	Example/Default
AA t l h w	Active Area <ul style="list-style-type: none"> t = top start l = left start h = height w = width 	Adjusts the active area size of each window by defining a starting point and dimensions.	AA 0 0 480 640
AR x	Aspect Ratio <ul style="list-style-type: none"> ANA = Anamorphic PAN = Panoramic LTR = Letter Box EXT = Extract THR = Through 	Sets the aspect ratio.	AR ANA
BC r g b	Border Color (0 – 255)	Sets the border color.	BC 0 0 0
BE x	Border Enable (0 – 1)	Activates the border.	BE 0
BT n	Border Thickness (0 – 255)	Sets the pixel thickness of the border.	BT 0
CH x	Channel select (1 – 4)	Shows the channel number.	CH 1
DE x y	Detail Enhancement (0 – 63) <ul style="list-style-type: none"> x = detail level y = detail noise threshold 	Sets the noise and filtering levels.	DE 0 0
DM x	Deinterlace Mode <ul style="list-style-type: none"> A = Fully Adaptive F = Field Merging T = Temporal Only 	Determines deinterlacer operating mode.	DM a
EB x	Edge Blending (0 – 1)	Blends left side of video to remove border on left side. Used for combining two channels or two VIP-4400s to appear seamless. This is a read-only command.	EB 1
FD x	Freeze Frame Detection <ul style="list-style-type: none"> D = Disabled T = T Compensation V = VT Compensation 	Sets the quality of the deinterlacer.	FD v
FF x	Freeze Frame <ul style="list-style-type: none"> 0 = off 1 = on 	Freezes the frame.	FF 0
FH x	Horizontal Filter (0 – 9)	Adjusts the horizontal sharpness filter.	FH 5

Command	Description	Definition	Example/Default
FI x	Video Transparency (0 – 256)	Adjusts video fade.	FI 256
FT x	Freeze Frame Threshold (0 – 7)	Sets the freeze frame threshold.	FT 7
FV x	Vertical Filter (0 – 9)	Adjusts the vertical sharpness filter.	FV 5
MD x	Motion Detection (0 – 1)	Activates motion detection operation during deinterlacing.	MD 1
MT x	Motion Threshold (0 – 15)	Sets the motion threshold detection parameter.	MT 10
NR x	Noise Reduction (0 – 63)	Sets amount of noise reduction applied to image.	NR 0
SI x	Video input selection <ul style="list-style-type: none"> • 1 – 4 = Composite • 11 – 14 = S-Video • 21 – 24 = Component • 31, 32 = VGA • 41 – 44 = SD-SDI • 51, 52 = DVI 	Assigns an input number to the video.	SI 41
SK r g b	Key Color (0 – 255)	Sets the key color.	SK 0 247 0
VA t l h w	Viewable Area <ul style="list-style-type: none"> • t = top start • l = left start • h = height • w = width 	Extracts the location and dimensions of the selected source.	VA 0 0 480 640
VB x	Video Brightness (0 – 255)	Adjusts sign brightness.	VB 128 128 128
VC x	Video Contrast (0 – 127)	Adjusts contrast ratio.	VC 64 64 64
VH x	Video Hue (0 – 255)	Adjusts hue levels.	VH 128
VS x	Video Saturation (0 – 127)	Adjusts the saturation level.	VS 64
WA t l h w	Window Area <ul style="list-style-type: none"> • t = top start • l = left start • h = height • w = width 	Adjusts current channel's output location on the display.	WA 0 0 480 640

9.2 Additional Configuration

Command	Description	Definition	Example/Default
AV x	V-Max™ 4 Transparency (0 – 256)	Controls transparency of incoming V-Max™ 4 content.	AV 256
BS t l h w	Background Size <ul style="list-style-type: none"> t = top vertical start point l = left horizontal start point h = window height w = window width 	Sets the background size.	BS 26 1 720 848
CK x	Channel Key (0 – 3) <ul style="list-style-type: none"> 0 = Luma keying disabled 1 – 3 = Channel Select, enables Luma keying on channel 	Selects which channel is keyed on Luma.	CK 0
CKL l h	Channel Key Limits (0 – 1023) <ul style="list-style-type: none"> l = low range value h = high range value 	Sets Luma Key limits.	CKL 64 960
FG haw hbw vas vae ve fr	V-Max™ 4 Frame Generation <ul style="list-style-type: none"> haw = horizontal active width hbw = horizontal blank width vas = vertical active start vae = vertical active end ve = vertical end fr = frame rate 	Sets the frame generation parameters.	FG 1280 358 26 745 750 0
FGC r g b	Frame Generation Color (0 – 255)	Sets the frame generation color.	FGC 0 247 0
IL x r c	Interleave Mode <ul style="list-style-type: none"> x = 1 (enable) or 0 (disable) r = row pattern (0 – 4) c = column pattern (0 – 4) 	Activates interleave mode and sets interleave pattern.	IL 0 2 2
ILM xxxx...	Interleave Matrix	Sets the interleave matrix.	ILM 0770000000000000
KR x	Chrome Range (0 – 255)	Adjusts how far the key color can be from the center value (set by SK and VK) to key the channel. Only applicable in Chroma mode.	KR 10
PS tl tc tr l c r bl bc br	Post Sharpening (-71 – 55) <ul style="list-style-type: none"> tl = top left tc = top center tr = top right l = center left c = center center r = center right bl = bottom left bc = bottom center br = bottom right 	Applies sharpening to all video channels after processing.	PS 0 0 0 0 32 0 0 0 0

Command	Description	Definition	Example/Default
SS x	Source Selection Mode <ul style="list-style-type: none"> • V = Venus® controllers • I = Video • O = Overlay • C = Chroma • A = Alpha 	Selects the processor output source.	SS I
TM x	Track Mode <ul style="list-style-type: none"> • 1 = On • 0 = Off 	Reconfigures the V-Max™ input of the processor to sync to a master source.	TM 1
VF x	Video Format <ul style="list-style-type: none"> • A = Auto-Detect • NJ = NTSC-J • N = NSTC-M • P6 = PAL-60 • N4 = NTSC 4, 43 • P = PAL B/G, D/K, H, I • PN = PAL-N • PMw = PAL-M (without pedestal) • PM = PAL-M • PNC = PAL-Nc • PNcw = PAL-Nc (with pedestal) • S = SECAM • Sw = SECAM (with pedestal) 	Sets the processor to a specific video input format.	VF A
VK x x x	V-Max™ 4 Key Color RGB (0 – 255)	Sets the V-Max™ 4 key color.	VK 0 247 0
XD x	Frame Delay (1 – 63)	Delays video by the selected number of frames. The maximum delay is determined by the number of active pixels in the V-Max™ 4 frame.	XD 1
ZO x x x x x	Channel Z-order (0 – 4) <ul style="list-style-type: none"> • 0 = V-Max™ • 1 – 4 = Channel 	Sets z-order.	ZO 1 2 3 4 0

9.3 Display Configuration

Command	Description	Definition	Example/Default
CS h w	Display Size <ul style="list-style-type: none"> • h = height • w = width 	Determines sign size.	CS 480 640
CT x	Sign Color Technology	Sets the sign color technology.	CT 11
DD x	Display Dimming (0 – 127)	Controls dimming from white to black.	DD 127 127 127 127

Command	Description	Definition	Example/Default
DF x	Face Enable Mask (0 – FFFF) • parameter is hex mask	Enables the number of active faces.	DF F
DG x	Gamma Value (10 – 41, 0-255)	Sets the gamma level.	DD 28 28 28 28
DX Rr Rg Rb Gr Gg Gb Br Bg Bb	Color Correction Values (-32768 – 32767) • Rr = Red red • Rg = Red green • Rb = Red blue • Gr = Green red • Gg = Green green • Gb = Green blue • Br = Blue red • Bg = Blue green • Bb = Blue blue	Configures the data display color correction.	DX 32767 0 0 0 32767 0 0 0 32767
MG x	Gamma Method (0, 1 – 6)	Sets gamma method.	MG 0
SN x	Sign Number (0 – 14)	Assigns sign number.	SN 0
SP t l h w	Sign Position (absolute) • t = top start point • l = left start point • h = window height • w = window width	Sets the absolute sign position.	SP 26 1 480 640
VY	V-Max™ 4 Frame Rate (read only)	Displays V-Max™ 4 frame rate (Hz).	VY 59.94

9.4 Data Distributor Configuration

Command	Description	Definition	Example/Default
CC w1 w2...w31	Configure Columns	Configures selected columns.	CC 0 256 256 128
CR h1 h2...h15	Configure Rows	Configures selected rows.	CR 0 48 48 48 48 48
DP t l h w	Data Distributor Position (relative) • t = top start point • l = left start point • h = window height • w = window width	Sets data display position.	DP 0 0 0 240 640
GCS x	Get Sign Configuration (0 – 14)	Displays configuration of specified sign number.	GCS 0

9.5 Effect/Transitions

Command	Description	Definition	Example/Default
TE0 ch a t	Fade Video <ul style="list-style-type: none"> ch = channel (1 – 5) a = alpha (0 – 256) t = time (milliseconds) 	Sets and adjusts channel source or V-Max™ 4 fade.	TE0 1 2556 5000
TE3 ch t l t	Move Window Area <ul style="list-style-type: none"> ch = channel (1 – 4) t = top start point l = left start point t = time (milliseconds) 	Sets and adjusts channel window area location.	TE3 1 250 250 1000
TE4 ch i e t	Wipe Active Area <ul style="list-style-type: none"> ch = channel (1 – 4) i = out/in (0 – 1) e = effect pattern (0 – 10) t = time (milliseconds) 	Uses wipe transition to turn channel on/off.	TE4 1 1 10 5000
TE5 ch t l h w t	Move/Resize Window Area <ul style="list-style-type: none"> ch = channel (1 – 4) t = top start point l = left start point h = window height w = window width t = time (milliseconds) 	Moves and resizes the channel window area.	TE5 1 0 0 720 848 10000

9.6 Miscellaneous Commands

Command	Description	Definition	Example/Default
CF x	Configuration S = Save D = Delete	Saves or deletes a configuration.	CF S
GC	Get Configuration	Displays the current channel's configuration.	GC
GI	Get ID	Displays the processor ID.	GI
GM	Get Memory Configuration	Displays the current memory configuration.	GM
GS	Get Status	Display video input, channel, and V-Max™ 4 status.	GS
GSV	Get Status Video	Displays detailed video input, channel, and V-Max™ 4 status.	GSV
GV	Get Version	Reports all version numbers.	GV

Command	Description	Definition	Example/Default
IP xxx.xxx.xxx.xxx	IP <address>	Sets IP address.	IP 192.168.0.160
NM xxx.xxx.xxx.xxx	Net Mask	Sets net mask.	NM 255.255.0.0
PN	Ping (returns OK)	Confirms V-Link is on.	PN
SV r c rt ct	V-Link Position <ul style="list-style-type: none"> • r = row • c = column • rt = row total • ct = column total 	Sets V-Link position.	SV 1 1 1 2
XR	eXternal Reset	Resets processor.	XR
XRD	eXternal Reset + Delete Configuration	Deletes configuration and resets processor.	XRD
XRS	eXternal Reset + Delete Start	Removes the start file and reboots V-Link.	XRS

9.7 VIP-4510 Commands

Command	Description	Definition	Example/Default
VXAR x	Auto Refresh Enable <ul style="list-style-type: none"> • 1 = Enable • 0 = Disable 	Enables/disables the waveform monitor's automatic refresh option.	VXAR 1
VXGC	Get Configuration	Displays configuration.	VXGC
VXGS	Get Status	Displays video input and output status.	VXGS
VXGV	Get Version	Displays current firmware version.	VXGV
VXGW	Get Waveform Configuration	Displays waveform configuration.	VXGW
VXID x	VIP-4510 ID (0-9)	Sets the V-Xport™ ID number to display on the test pattern in a multiple V-Xport™ system.	VXID 0
VXIL x	Interleave Enable <ul style="list-style-type: none"> • 1 = Enable • 0 = Disable 	Enables/disables the interleave mode.	VXIL 1
VXMS t l	Waveform Measurement Start Line and Sample <ul style="list-style-type: none"> • t = top (0 – 2048) • l = left (0 – 2048) 	Determines start position of sampled data.	VXMS 30 13

Command	Description	Definition	Example/Default
VXTPA vf tp rrggbb	Test Pattern Analog <ul style="list-style-type: none"> • vf = test pattern resolution (0 – 12) • tp = test pattern • rrggbb = color (24 bit hex) 	Enables/disables test patterns, sets the test pattern type, and sets the test pattern color.	VXTPA 1 1 dda0dd
VXTPR vf tp rrggbb	Test Pattern RGB <ul style="list-style-type: none"> • vf = test pattern resolution (0 – 9) • tp = test pattern • rrggbb = color (24 bit hex) 	Enables/disables test patterns, sets the test pattern type, and sets the test pattern color.	VXTPR 1 6 dda0dd
VXTPS vf tp rrggbb	Test Pattern SDI <ul style="list-style-type: none"> • vf = test pattern resolution (0 – 5) • tp = test pattern • rrggbb = color (24 bit hex) 	Enables/disables test patterns, sets the test pattern type, and sets the test pattern color.	VXTPS 2 3 dda0dd
VXVA t l h w	Viewable Area <ul style="list-style-type: none"> • t = top start point • l = left start point • h = window height • w = window width 	Adjusts the VIP-4510 viewable area.	VXVA 0 0 480 640
VXVB x	Video Brightness (0 – 255)	Adjusts the video brightness through the VIP-4510.	VXVB 128
VXVC x	Video Contrast (0 – 127)	Adjusts the video contrast through the VIP-4510.	VXVC 64
VXVF x	Video Format <ul style="list-style-type: none"> • x = VIP-4510 video format command (Analog A0 – A12, RGB R0 – R9, HD/SDI S0 – S5). Refer to Section 9.8 	Adjusts the output video resolution.	VXVF R2
VXVH x	Video Hue (0 – 255)	Adjusts the video hue through the VIP-4510.	VXVH 128
VXVS x	Video Saturation (0 – 127)	Adjusts the video saturation through the VIP-4510.	VXVS 64
VXWA t l h w	Window Area <ul style="list-style-type: none"> • t = top start point • l = left start point • h = window height • w = window width 	Adjusts the VIP-4510 converter's window area.	VXWA 0 0 480 640
VXWE x	Waveform Monitor Enable <ul style="list-style-type: none"> • 1 = Enable • 0 = Disable 	Enables/disables waveform monitor.	VXWE 0
VXXE x	Gamma Enable <ul style="list-style-type: none"> • 1 = Enable • 0 = Disable 	Enables gamma through the VIP-4510.	VXXE 1
VXXG x	Gamma Value (10 – 41)	Sets the gamma value through the VIP-4510.	VXXG 10

9.8 VIP-4510 Video Format Commands

Device or Mode	Format	Active Size (Row x Column)	Output Type
A0	NTSC	480 x 640	Composite/S-Video
A1	NTSC - overscan	480 x 640	Composite/S-Video
A2	PAL	576 x 720	Composite/S-Video
A3	PAL - underscan	576 x 720	Composite/S-Video
A4	PAL - overscan	576 x 720	Composite/S-Video
A5	ATSC 480p (component)	480 x 720	Component
A6	ATSC 720p (component)	720 x 1280	Component
A7	N/A	N/A	Component
A8	NTSC component	480 x 640	Component
A9	NTSC component - overscan	480 x 640	Component
A10	PAL component	576 x 720	Component
A11	PAL component - underscan	576 x 720	Component
A12	PAL component - overscan	576 x 720	Component
R0	VGA, 640 x 480	480 x 640	DVI/VGA
R1	SVGA, 800 x 600	600 x 800	DVI/VGA
R2	XGA, 1024 x 768	768 x 1024	DVI/VGA
R3	WXGA, 1280 x 768	768 x 1280	DVI/VGA
R4	WXGA, 1360 x 768	768 x 1360	DVI/VGA
R5	SXGA, 1280 x 960	960 x 1280	DVI/VGA
R6	SXGA, 1280 x 1024	1024 x 1280	DVI/VGA
R7	SXGA+, 1400 x 1050	1050 x 1400	DVI/VGA
R8	UXGA, 1600 x 1200	1200 x 1600	DVI/VGA
R9	WUXGA, 1920 x 1200, reduced blanking	1200 x 1920	DVI/VGA
S0	480i60	480 x 720	SDI
S1	480i50	576 x 720	SDI
S2	720p60	720 x 1280	SDI
S3	720p50	720 x 1280	SDI
S4	1080i60	1080 x 1920	SDI
S5	1080i50	1080 x 1920	SDI

Section 10: Exchange/Repair & Return Programs

To serve customers' repair and maintenance needs, Daktronics offers both an Exchange Program and a Repair & Return Program.

10.1 Exchange Program

Daktronics unique Exchange Program is a quick service for replacing key parts in need of repair. If a part requires repair or replacement, Daktronics sends the customer a replacement, and the customer sends the defective part to Daktronics. This decreases display downtime.

Before Contacting Daktronics

Identify these important part numbers:

Display Serial Number: _____

Display Model Number: _____

Contract Number: _____

Installation Date: _____

Sign Location (Mile Marker Number): _____

Daktronics Customer ID Number: _____

1. Call Daktronics Customer Service.

Market Description	Customer Service Number
Schools (primary through community/junior colleges), religious organizations, municipal clubs, and community centers	877-605-1115
Universities and professional sporting events, live events for auditoriums, and arenas	866-343-6018
Financial institutions, petroleum, sign companies, gaming, and wholesale/retail establishments	866-343-3122
Department of Transportation, mass transits, airports, and parking facilities	800-833-3157

2. After receiving the new exchange part, mail the old part to Daktronics.

If the replacement part fixes the problem, send in the problem part which is being replaced.

- a. Package the old part in the same shipping materials in which the replacement part arrived.
- b. Fill out and attach the enclosed UPS shipping document.
- c. Ship the part to Daktronics.

3. Daktronics will charge for the replacement part immediately, unless a qualifying service agreement is in place.

In most circumstances, the replacement part will be invoiced at the time it is shipped.

4. If the replacement part does not solve the problem, return the part within 30 working days, or Daktronics will charge the full purchase price.

If the part is still defective after the exchange is made, please contact Customer Service immediately. Daktronics expects *immediate return* of an exchange part if it does not solve the problem. The company also reserves the right to refuse parts that have been damaged due to acts of nature or causes other than normal wear and tear.

10.2 Repair & Return Program

For items not subject to exchange, Daktronics offers a Repair & Return Program. To send a part for repair, follow these steps:

1. **Call or fax Daktronics Customer Service.**
Refer to the telephone number listed on the previous page.
Fax: 605-697-4444
2. **Receive a Return Materials Authorization (RMA) number before shipping.**
This expedites repair of the part.
3. **Package and pad the item carefully to prevent damage during shipping.**
Electronic components, such as printed circuit boards, should be placed in an anti-static bag before boxing. Daktronics does not recommend packing peanuts when shipping.
4. **Enclose:**
 - Contact Name
 - Address
 - Phone number
 - RMA number
 - Clear description of symptoms
 - Case number

Shipping Address

Daktronics Customer Service
P.O. Box 5128
201 Daktronics Dr.
Brookings, SD 57006

10.3 Daktronics Warranty & Limitation of Liability

The Daktronics Warranty & Limitation of Liability is located in **Appendix B**. The warranty is independent of extended service agreements and is the authority in matters of service, repair, and display operation.

Glossary

1080i: High-definition signal with 1080 scanning lines and interlaced scanning. This format provides up to six times the detail of conventional TV pictures.

720p: High-definition signal with 720 active scanning lines and progressive (“p”) scanning. Used in digital television broadcasting, it provides three times the detail of conventional TV pictures.

Active Input Architecture: Properties of the VIP-4400 that allow for displaying multiple channels, zoning, blending, and switching.

Aspect Ratio: The ratio of a picture’s width to height. Most video monitors and televisions display a 4:3 image; however, wide-screen displays 16:9.

Component Video Connections (Y/PB/PR): The best method for connecting analog video signals. Y/PB/PR is ideal for DVD players and compatible satellite receivers. It uses separate connections for luminance (Y), blue color difference (PB), and red color difference (PR).

Component Video Connection (R/G/B): The best method for connecting analog video signals. R/G/B is ideal for HDTV receivers and computer signals. It uses separate connections for Red (R), Green (G), and Blue (B).

Composite (COMP): A video signal in which the luminance (black and white information) and chrominance (color information) are combined on the same wire using one of the coding standards: NTSC, PAL, SECAM, etc. Picture quality is lost whenever chrominance and luminance are stripped apart.

DMP-7000: Daktronics-designed software that controls displays.

EDID (Extended Display Identification Data): A data structure from a display that provides information to a video source such as display size and serial number.

Firmware: Software (programs or data) that has been written onto read-only memory as a permanent part of a computing device. It allows software to be read and executed but does not allow modification. Firmware is embedded in a hardware device and is considered a combination of software and hardware.

Gamma Correction: A process used with video images to correct brightness and internal microcontrast within the image. Changing the value of the gamma affects middle ranges, while leaving the full white and full black of the image unaltered.

HD-SDI (High-Definition Serial Digital Interface): A digital video interface used with high-definition video.

Interlaced Scanning: The opposite of progressive scanning. Interlaced scanning is the technology behind conventional television signal, which shows half of a frame’s scanning lines every 1/60 second. First the odd-numbered lines display, then the even-numbered lines.

Key Color: A color in a video image replaced by elements of a second image.

Luminance: The black-and-white component of a video signal, abbreviated Y. Luminance is combined with the color signal (chrominance) in composite video connections, but kept apart in S-Video and component connections.

Overlay: Keyed insertion of one image into another. Overlay is used, for example, to superimpose computer-generated text on top of a video image. In video, overlay requires synchronized sources for proper operation.

Refresh Rate: Number of times per second a display is updated or “repainted”. NTSC signals have a refresh rate of 30 times per second; PAL signals have a refresh rate of 25 times per second. LED displays should be refreshed at least 120 times per second.

RGB (Red-Green-Blue): Colors of LEDs used in full-color Daktronics displays. All colors are defined in terms of a combination of these three colors. For example, the RGB abbreviation for the color blue is 0-0-255.

SDI (Serial Digital Interface): A digital video interface used with broadcast-grade video.

S-Video (Super-Video, Y/C Video): A technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (chrominance), and the other for brightness (luminance). When sent to a television, S-Video produces sharper images than composite video, where the video information is transmitted as a single signal over one wire; this is because televisions are designed to display separate Luminance (Y) and Chrominance (C) signals.

SXGA (Super eXtended Graphics Array): A standard monitor resolution of 1280 x 1024 pixels.

Tera Term Program: A computer program that obtains diagnostic information through a COM port. The Tera Term program allows users to see the communication between the computer and the VIP-4400.

True Pixel™ Processing: Video processing technology that improves image clarity and color.

VGA (Video Graphics Array): A graphics display system for PCs developed by IBM. VGA uses analog signals rather than digital signals. VGA computer monitors have a resolution of at least 640 x 480 pixels.

Viewable Area (VA): The video area a sign displays. This is the portion of the incoming video that the Channel uses for output. The VA is smaller than the total video signal area because a black (or blank) border of about 50 to 100 extra pixels is built into the signal.

Video Image Processor (VIP): Device primarily intended to accept and process live video and/or computer graphics feeds before sending them to a display.

V-Max™ 4 signal: The proprietary signal used with Daktronics displays.

Appendix A: Technical Specifications

Refer to the table below for technical specifications of the VIP-4400.

Specification	VIP-4400
Physical Size	4.318 cm (1.7") high 48.3 cm (19") wide 58.4 cm (23") deep
Weight	7.48 kg (16.5 lb)
Video Compatibility	VGA/DVI, SDI (480i, 480p, 720p, 1080i)
Display Inputs	SDI/HD-SDI @ 4 VGA/DVI @ 2 V-Max™ 4 @ 2 (1 fiber-optic, 1 BNC)
Display Outputs	V-Max™ 4 (BNC) @ 2 V-Max™ 4 (fiber-optic) @ 1
Power	110/220V (50/60Hz)
Mounting Options	1 RU rackmount

Appendix B: Daktronics Warranty & Limitation of Liability

This section includes the Daktronics Warranty & Limitation of Liability statement.

DAKTRONICS WARRANTY & LIMITATION OF LIABILITY

This Warranty and Limitation of Liability (the "Warranty") sets forth the warranty provided by Daktronics with respect to the Equipment. By accepting delivery of the Equipment, Purchaser agrees to be bound by and accept these terms and conditions. Unless otherwise defined herein, all terms within the Warranty shall have the same meaning and definition as provided elsewhere in the Agreement.

DAKTRONICS WILL ONLY BE OBLIGATED TO HONOR THE WARRANTY SET FORTH IN THESE TERMS AND CONDITIONS UPON RECEIPT OF FULL PAYMENT FOR THE EQUIPMENT.

1. Warranty Coverage

A. Daktronics warrants to the original end-user that the Equipment will be free from Defects (as defined below) in materials and workmanship for a period of one (1) year (the "Warranty Period"). The Warranty Period shall commence on the earlier of: (i) four weeks from the date that the Equipment leaves Daktronics' facility; or (ii) Substantial Completion as defined herein. The Warranty Period shall expire on the first anniversary of the commencement date.

"Substantial Completion" means the operational availability of the Equipment to the Purchaser in accordance with the Equipment's specifications, without regard to punch-list items, or other non-substantial items which do not affect the operation of the Equipment.

B. Daktronics' obligation under this Warranty is limited to, at Daktronics' option, replacing or repairing, any Equipment or part thereof that is found by Daktronics not to conform to the Equipment's specifications. Unless otherwise directed by Daktronics, any defective part or component shall be returned to Daktronics for repair or replacement. This Warranty does not include on-site labor charges to remove or install these components. Daktronics may, at its option, provide on-site warranty service. Daktronics shall have a reasonable period of time to make such replacements or repairs and all labor associated therewith shall be performed during regular working hours. Regular working hours are Monday through Friday between 8:00 a.m. and 5:00 p.m. at the location where labor is performed, excluding any holidays observed by either Purchaser or Daktronics.

C. Daktronics shall pay ground transportation charges for the return of any defective component of the Equipment. All such items shall be shipped by Purchaser DDP Daktronics; designated facility. If returned Equipment is repaired or replaced under the terms of this warranty, Daktronics will prepay ground transportation charges back to Purchaser and shall ship such items DDP Purchaser's designated facility; otherwise, Purchaser shall pay transportation charges to return the Equipment back to the Purchaser and such Equipment shall be shipped Ex Works Daktronics designated facility. All returns must be pre-approved by Daktronics before shipment. Daktronics shall not be obligated to pay freight for any unapproved return. Purchaser shall pay any upgraded or expedited transportation charges.

D. Any replacement parts or Equipment will be new or serviceably used, comparable in function and performance to the original part or Equipment, and warranted for the remainder of the Warranty Period. Purchasing additional parts or Equipment from the Seller does not extend the Warranty Period.

E. Defects shall be defined as follows. With regard to the Equipment (excepting LEDs), a "Defect" shall refer to a material variance from the design specifications that prohibit the Equipment from operating for its intended use. With respect to LEDs, "Defects" are defined as LED pixels that cease to emit light. The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for partial LED pixel degradation nor does the limited warranty provide for the replacement or installation of communication methods including but not limited to, wire, fiber optic cable, conduit, trenching, or for the purpose of overcoming local site interference radio equipment substitutions.

EXCEPT AS OTHERWISE EXPRESSLY SET FORTH IN THIS WARRANTY, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, DAKTRONICS DISCLAIMS ANY AND ALL OTHER PROMISES, REPRESENTATIONS AND WARRANTIES APPLICABLE TO THE EQUIPMENT AND REPLACES ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY OR QUALITY OF DATA. NO ORAL OR WRITTEN INFORMATION, OR ADVICE GIVEN BY THE COMPANY, ITS AGENTS OR EMPLOYEES, SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS LIMITED WARRANTY.

THIS LIMITED WARRANTY IS NOT TRANSFERABLE.

2. Exclusion from Warranty Coverage

The limited warranty provided by Daktronics does not impose any duty or liability upon Daktronics for:

A. Any damage occurring, at any time, during shipment of Equipment unless otherwise provided for in the Agreement. When returning Equipment to Daktronics for repair or replacement, Purchaser assumes all risk of loss or damage, and agrees to use any shipping containers that might be provided by Daktronics and to ship the Equipment in the manner prescribed by Daktronics;

B. Any damage caused by the improper handling, installation, adjustment, use, repair or service of the Equipment by anyone other than personnel of Daktronics or its authorized repair agents;

C. Any physical damage which includes, but is not limited to, missing, broken, or cracked components resulting from non-electrical causes; altered, scratched, or fractured electronic traces; missing or gauged solder pads; cuts or clipped wires; crushed, cracked, punctured, or bent circuit boards; or tampering with any electronic connections;

D. Damage caused by the failure to provide a continuously suitable environment, including, but not limited to: (i) neglect or misuse, (ii) improper power including, without limitation, a failure or sudden surge of electrical power (iii) improper air conditioning, humidity control, or other environmental conditions outside of the Equipment's technical specifications such as extreme temperatures, corrosives and metallic pollutants, or (iv) any other cause other than ordinary use;

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E. Damage caused by fire, flood, earthquake, water, wind, lightning or other natural disaster, strike, inability to obtain materials or utilities, war, terrorism, civil disturbance or any other cause beyond Daktronics' reasonable control;

F. Failure to adjust, repair or replace any item of Equipment if it would be impractical for Daktronics personnel to do so because of connection of the Equipment by mechanical or electrical means to another device not supplied by Daktronics, or the existence of general environmental conditions at the site that pose a danger to Daktronics personnel;

G. Any statements made about the product by any salesperson, dealer, distributor or agent, unless such statements are in a written document signed by an officer of Daktronics. Such statements as are not included in a signed writing do not constitute warranties, shall not be relied upon by Purchaser and are not part of the contract of sale;

H. Any damage arising from the use of Daktronics products in any application other than the commercial and industrial applications for which they are intended, unless, upon request, such use is specifically approved in writing by Daktronics;

I. The security or functionality of the Purchaser's network or systems;

I. Any performance of preventive maintenance;

J. Third-party systems and other ancillary equipment including without limitation front-end video control systems, audio systems, video processors and players, HVAC equipment, batteries and LCD screens;

K. Incorporation of accessories, attachments, software or other devices not furnished by Daktronics; or

L. Paint or refinishing the Equipment or furnishing material for this purpose.

3. **Limitation of Liability**

Daktronics shall be under no obligation to furnish continued service under this Warranty if alterations are made to the Equipment without the prior written approval of Daktronics.

It is specifically agreed that the price of the Equipment is based upon the following limitation of liability. In no event shall Daktronics (including its subsidiaries, affiliates, officers, directors, employees, or agents) be liable for any claims asserting or based on (a) loss of use of the facility or equipment, lost business, revenues, or profits, loss of goodwill, failure or increased cost of operations, loss, damage or corruption of data, loss resulting from system or service failure, malfunction, incompatibility, or breaches in system security, or (b) any special, consequential, incidental or exemplary damages arising out of or in any way connected with the Equipment or otherwise, including but not limited to damages for lost profits, cost of substitute or replacement equipment, down time, lost data, injury to property or any damages or sums paid by Purchaser to third parties, even if Daktronics has been advised of the possibility of such damages. The foregoing limitation of liability shall apply whether any claim is based upon principles of contract, tort or statutory duty, principles of indemnity or contribution, or otherwise.

In no event shall Daktronics be liable to Purchaser or any other party for loss, damage, or injury of any kind or nature arising out of or in connection with this Warranty in excess of the purchase price of the Equipment actually delivered to and paid for by the Purchaser. The Purchaser's remedy in any dispute under this Warranty shall be ultimately limited to the Purchase Price of the Equipment to the extent the Purchase Price has been paid.

4. **Assignment of Rights**

The Warranty contained herein extends only to the original end-user (which may be the Purchaser) of the Equipment and no attempt to extend the Warranty to any subsequent user-transferee of the Equipment shall be valid or enforceable without the express written consent of Daktronics.

5. **Governing Law**

The rights and obligations of the parties under this warranty shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods of 1980. Both parties consent to the application of the laws of the State of South Dakota to govern, interpret, and enforce all of Purchaser and Daktronics rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Warranty, without regard to conflict of law principles.

6. **Availability of Extended Service Agreement**

For Purchaser's protection, in addition to that afforded by the warranties set forth herein, Purchaser may purchase extended warranty services to cover the Equipment. The Extended Service Agreement, available from Daktronics, provides for electronic parts repair and/or on-site labor for an extended period from the date of expiration of this warranty. Alternatively, an Extended Service Agreement may be purchased in conjunction with this warranty for extended additional services. For further information, contact Daktronics Customer Service at 1-800-DAKTRONICS (1-800-325-8766).