SERIAL COMMAND SET

This section discusses the DualView serial control commands. The command set provides access to all of the unit's functions.

An optional software control program, called the Virtual Control Panel, is also available. See "Control Software for Windows" on page 10 for more information on this program.

GENERAL

The command set is made up of ASCII characters. Commands are case insensitive and each has both a long and a short form. The short form is indicated by the capitalized letters in the long form of the command.

> *Example—*the command "**BAUDrate**" can be entered in the following ways:

>baudrate	>baud
>BAUDRATE	>BAUD

Most commands are used to set a variable—called an "argument"—or to get the value of a variable. The format <command> <value> sets "command" to a "value", whereas <command> alone returns the value. Arguments appearing in square brackets "[ ]" are optional.

> *Example—*set BRIghtness to 125 and then check the current value for CONTrast:

>bri 125	*sets the value*
>cont	*checks the value*

System returns:

>contrast 95	*system reports the value*

Illegal commands or arguments generate error messages and correct usage instructions.

To execute serial instructions, each command line must be followed by a carriage return <CR>.

CONTROL SOFTWARE FOR WINDOWS

RGB Spectrum offers an optional software control program which runs under Microsoft Windows 95, 98, 2000, and NT. The DualView Virtual Control Panel (VCP) is a graphical user interface to RS-232 serial control.
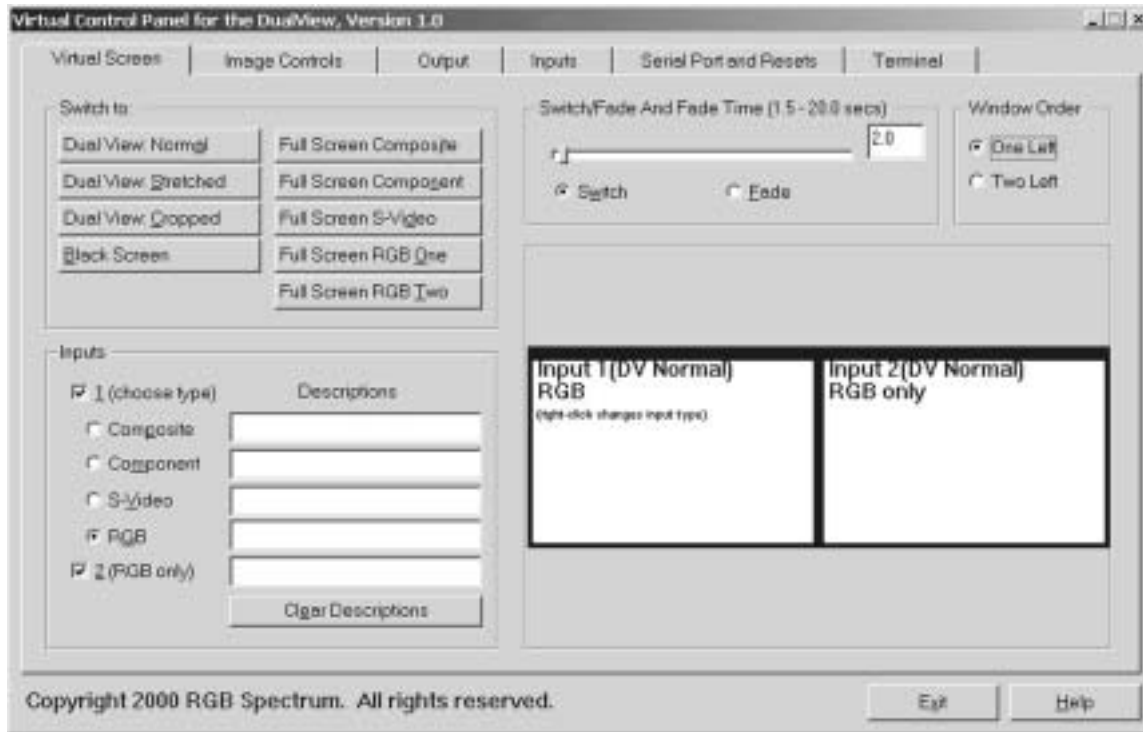

FIGURE 4.   VCP Software for DualView

With the VCP, you have push button control over all functions of the DualView. The VCP requires the same serial connections as described in *Appendix A "RS-232 Control."*

The VCP has an on-line help feature, so the application is not covered in this User Manual. If you have purchased the VCP control software, please refer to the online help, accessible on each section of the software via the "Help" button located in the bottom-right corner of the screen.

COMMAND SET SUMMARY

This section provides a simple alphabetical listing of the DualView's RS-232 Command Set. Both forms of the commands (long and short) are listed here, as well as their associated parameters.

For a complete description of the commands and their parameters, refer to the detailed sections beginning on page 13.

INPUT COMMANDS

Command	Arguments	Abbreviation
INput	\<input#	ALL\>	IN
INput	\<input#\> \<AUTO	LOCK	DEBUG\>	IN
INputDELete	\<1…50\>	INDEL
INputFormat	\<input#\>	INF
INputInteractive	\<input#\>	INI
INputLIST	[\<1…50\>] [\<1…50\>] [\<ACTIVE\>]	INLIST
INputLOAD	\<input#\> \<1…50\>	INLOAD
INputName	\<input#\> \<name\> *(up to 17 characters—no spaces)*	INN
INputSave	\<input#\> \<1…50\>	INS
INputTiming	\<input#\> \<HFP\> \<HS\> \<HBP\> \<HACT\> \<VFP\> \<VS\> \<VBP\> \<VACT\>	INT
INputTYPE	\<input#\> \<COMPOSITE	SVIDEO	COMPONENT	RGB\>	INTYPE
LoadInputList	\<1…50\> \<name\> \<HFP\> \<HS\> \<HBP\> \<HACT\> \<VFP\> \<VS\> \<VBP\> \<VACT\> \<HFREQ\> \<SYNC\> \<HPOL\> \<VPOL\> \<IL\>	LIL

HOST COMMANDS

Command	Arguments	Abbreviation
ClearHostList	(none)	CHL
HOST	(none)	HOST
HostDELete	\<1…10\>	HDEL
HostInteractive	(none)	HI
HostLIST	[\<1…63\>] [\<1…63\>]	HLIST
HostLOAD	\<1…63\>	HLOAD
HostName	\<name\> *(up to 17 characters—no spaces)*	HN
HostSave	\<1…10\>	HS

HOST COMMANDS (CONTINUED)

Command	Arguments	Abbreviation
HostTiming	<HFP> <HS> <HBP> <HACT> <VFP> <VS> <VBP> <VACT> [<HFREQ> <SYNC> <HPOL> <VPOL> <IL>]	HT
OPTimize	<ON	OFF>	OPT

IMAGE POSITIONING/VISIBILITY

Command	Arguments	Abbreviation
DoubleBuffer	<input#> <ON	OFF>	DB
DualView	<NORMAL	STRETCH	CROP>	DV
DualViewMap	<1	2> <1	2>	DVM
FADE	<RGB1	RGB2	COMPOSITE	SVIDEO	COMPONENT	DVN	DVC	DVS	Black>	FADE
FreeZe	<input#	ALL> <ON	OFF>	FZ
FullScreen	<input#	Black>	FS
OVERSCAN	<input#> <ON	OFF>	OVERSCAN
PAN	<input#>	PAN
PictureInPicture	<foreground input#> <background input#> [<x> <y> <width> <height>]	PIP
POSition	<input#>	POS
RSR	<input#>	RSR
SIZE	<input#>	SIZE
TransitionTime	<1.5…20.0>	TT
WINdow	<input#	ALL> <ON	OFF>	WIN
WDR	<input#> <x> <y> <width> <height>	WDR
WSR	<input#> <x> <y> <width> <height>	WSR
ZooM	<input#>	ZM

IMAGE CONTROLS

Command	Arguments	Abbreviation
BRIght	<input#	ALL> <-500…500>	BRI
CONTrast	<input#	ALL> <0…200>	CONT

IMAGE CONTROLS

Command	Arguments	Abbreviation
GAMma	<input# | ALL | DV> <0.5…2.0>	GAM
HUE	<input#> <-180…180> *video only*	HUE
SATuration	<input#> <0…200> *video only*	SAT
SHARPness	<input#> <0 | 1 | 2 | 3>	SHARP

MISCELLANEOUS

Command	Arguments	Abbreviation
AUTOSAVE	<ON | OFF>	AUTOSAVE
DEMO	(none)	DEMO
Help	[<command_name>]	H
ID	(none)	ID
RestoreFactoryDefaults	(none)	RFD
SAVECONFIGURATION	(none)	SAVECONFIGURATION
STATus	(none)	STAT
TestPattern	<ON | OFF>	TP
VERSION	(none)	VERSION

SERIAL PORT FUNCTIONS

Command	Arguments	Abbreviation
BAUDrate	<1200 | 2400 | 9600 | 19200 | 38400 | 57600 | 115200>	BAUD
ECHO	<ON | OFF>	ECHO

INPUT COMMANDS

The Input Commands—except for **INputTYPE** and **INputFormat**— only address RGB inputs; they have no effect on video inputs. Input Commands are used to select from the different available input types —that is, RGB or video format for input 1— and adjust, load, and save timing parameters of RGB inputs.

INput <input#|ALL>

Displays information on the specified input, or all inputs with <ALL> argument, including **INputTiming** information, **INputName**, and lock status. (See table of definitions and accepted ranges with the **INputTiming** command on page 16.)

A sample response to the **INput** command:

```
MODE auto
AUTOSYNC_STATE locked
NUM NAME       HFP    HS    HBP  HACT   VFP  VS   VBP  VACT   HFREQ  SYNCHPOL  VPOL   IL
2   640x480_PC  62     64    96   640    3    3    41   478    35026  5         0      1        0
```

The autosync state "locked" confirms the DualView has a valid input signal on that RGB channel. The mode state "auto" indicates that autosync is turned on for that RGB channel. The mode state "disabled" indicates that autosync is turned off for that RGB channel.

This command is only valid when **INputType** is set to <RGB>.

INput <input#> <AUTO|LOCK|DEBUG>

Sets the input mode for the specified input. <AUTO> engages the autosync circuitry. <LOCK> turns the autosync circuitry off. <DEBUG> provides information on input status and reports changes to measured parameters.

This command is only valid when **INputType** is set to <RGB>.

Factory default: AUTO

INputDELete <1...50>

Deletes the specified saved input from the Input List. See **INputLIST [<1...50>] [<1...50>] [<ACTIVE>]** on page 15.

INputFormat <input#>

INputFormat is a read-only command for checking on the video format of the current video input selection. This command is only valid when **INputTYPE** is set to either <COMPOSITE>, <COMPONENT> or <SVIDEO>. The response to the command will be either "NTSC" or "PAL".

The <input#> argument can only be "1", as this is the only input channel with a video input board.

INputInteractive <input#>

Enters input interactive mode to visually adjust timing parameters of the specified input. A white box frame and crosshair appear over the full screen input. Use the keyboard controls—as shown in the steps below—to fit the input image precisely within the box frame.

1   **Adjust the lower-right corner of your image first**

The selected input should be on screen surrounded by a white box and crosshair. Starting with the lower-right corner of the image, use the controls to position and size the computer input so it is perfectly bordered by the white frame.

$$\textbf{I} = \text{move up}$$

$$\textbf{J} = \text{move left} \qquad\qquad \textbf{L} = \text{move right}$$

$$\textbf{M} = \text{move down}$$

2   Adjust the upper-left corner of your image

With the lower-right corner properly adjusted, address the upper-left corner next. Use the controls to position and size the computer input to fit within the white frame.

$$\textbf{i} = \text{move up}$$

$$\textbf{j} = \text{move left} \qquad\qquad \textbf{l} = \text{move right}$$

$$\textbf{m} = \text{move down}$$

3   Exit the utility

With your image properly adjusted, quit the utility by typing "q".

$$\textbf{q} = \text{quit}$$

4   Save your changes

After you have adjusted the input to your satisfaction, use the **INputName** command to name your input source, and the **INputSave** command to store the parameters into the Input List.

INputLIST [<1...50>] [<1...50>] [<ACTIVE>]

Without arguments, this command displays the entire Input List. If arguments are supplied, only the requested portion of the list is displayed.

With the argument <ACTIVE>, all saved list entries are displayed.

INputLOAD <input#> <1...50>

Loads the indicated entry from the Input List to the specified input channel.

The entry is loaded only if it matches the measured parameters of the signal—sync format and polarity, interlace state, vertical total, and horizontal frequency.

INputName <input#> <name>

Assigns a name to the specified input. The argument <name> can be up to 17 alphanumeric characters with no spaces.

The **INputSave** command must be issued to save the name.

INputSave <input#> <1...50>

Saves the specified input to the selected entry in the Input List. Also saves image parameters of brightness, contrast, and gamma. These settings are recalled along with the timing values whenever the signal is reapplied.

Use the **INputSave** command after you have used either the **INputInteractive** or **INputTiming** command to properly adjust the video timing and image parameters to your satisfaction. To assign a name to the input, use the **INputName** command prior to issuing the **INputSave** command.

INputTiming <input#> <HFP> <HS> <HBP> <HACT> <VFP> <VS> <VBP> <VACT>

Sets the timing of the selected input.

Note: the vertical total cannot be changed from the measured value; that is, the total of <VFP> + <VS> + <VBP> + <VACT> must remain constant.

The definition and range of each argument is:

HFP	• horizontal front porch	(0…640)	pixels
HS	• horizontal sync	(16…640)	pixels
HBP	• horizontal back porch	(0…640)	pixels
HACT	• horizontal active	(16…1280)	pixels
VFP	• vertical front porch	(0…512)	lines
VS	• vertical sync	(2…32)	lines
VBP	• vertical back porch	(0…512)	lines
VACT	• vertical active	(12…1024)	lines
HFREQ	• horizontal frequency in Hz	(15…90)	kHz
SYNC	• sync format	3, 4, or 5	wires
HPOL	• horizontal sync polarity	(1/0)	
VPOL	• vertical sync polarity	(1/0)	
IL	• interlaced/non-interlaced	(1/0)	

INputTYPE <input#> <RGB|COMPOSITE|COMPONENT|SVIDEO>

The **INputTYPE** command is used for input channel 1 which has a video input board. The command selects between the four possible input types of the channel. Only one input type can be used at a time.

The <input#> argument can only be "1", as this is the only input channel with a video input board.

Factory default: RGB

LoadInputList <1...50> <name> <HFP> <HS> <HBP> <HACT> <VFP> <VS> <VBP> <VACT> <HFREQ> <SYNC> <HPOL> <VPOL> <IL>

The **LoadInputList** command allows the user to define input timing strings without requiring the input signal to be present. For example, if one DualView system has an Input List which must be copied to a second unit, the **LoadInputList** command could be used to enter in the list entries one by one.

The first argument, <1...50>, indicates the Input List entry number to store the timing string to. The second argument, <name>, gives a customized name to the signal. The

next eight arguments, <HFP> <HS> <HBP> <HACT> <VFP> <VS> <VBP> <VACT>, define the signal's timing.   The next five, <HFREQ> <SYNC> <HPOL> <VPOL> <IL>, define the horizontal frequency, sync format and polarity, and interlace status. All 15 arguments must be supplied for the command to be successful.

HOST COMMANDS

The Host commands control the output of the DualView. They define the output or "host" timing and sync format, and save, load, and delete timings to the Host List.

ClearHostList

Clears the Host List of all user-defined hosts.

HOST

A query command which returns information on the selected host timing.

HostDELete <1...10>

Deletes the numbered, user-defined host.

HostInteractive

Enters host interactive mode. This is an adjustment mode for changing the **HostTiming** values to better suit your display device. Once in the interactive mode, a white box and crosshair appear on the output display.

1   **Adjust the lower-right corner of your display**

The onscreen should be a white box and crosshair. Starting with the lower-right corner of the box, use the controls to position and size the image so that it fits and fills the screen to your satisfaction.

<div align="center">

I = move up

J = move left   **L** = move right

M = move down

</div>

2   **Adjust the upper-left corner of your output**

With the lower-right corner properly adjusted, address the upper-left corner next. Use the controls to position and size the white box frame.

<div align="center">

i = move up

j = move left   **l** = move right

m = move down

</div>

3   **Exit the utility**

With your image properly adjusted, quit the utility by typing "q".

> **q** = quit

4   Save your changes

After you have adjusted the input to your satisfaction, use the **HostName** command to name your input source, and the **HostSave** command to store the parameters into the Host List.

DIGITAL OUTPUT AND HOST INTERACTIVE

Although the host interactive adjustment frame appears on the digital output, the procedure does not affect the display. The only way to adjust the digital output is by manipulating the horizontal and vertical active **HostTiming** values. **HostInteractive** only adjusts front and back porch blanking values.

HostLIST [<1...63>] [<1...63>]

Without arguments, this command displays all of the entries in the Host List (Figure 5). With one argument, it returns information on the specified Host List entry. With both arguments, it returns the portion of the Host List specified by the arguments.

The first 10 entries are user-defined. These slots are reserved for host timing strings the user defines with the **HostTiming** and **HostInteractive** commands, and saves with the **HostSave <1...10>** command.

Entries 11 through 54 include both progressive (non-interlaced) and interlaced hosts with a standard 4:3 or 5:4 aspect ratio. They are listed in order of decreasing resolution and frequency. Entries 55 through 63 are 16:9, wide-screen hosts.

Host 11 is the host used for default operation.

#	NAME	HFP	HS	HBP	HACT	VFP	VS	VBP	VACT	HFREQ	SYNC	HPOL	VPOL	IL
11	VESA_1280x1024_75	16	144	248	1280	1	3	38	1024	79980	5	1	1	0
12	VESA_1280x1024_60	48	112	248	1280	1	3	38	1024	63983	5	1	1	0
13	1280x1024___59.94	48	112	248	1280	1	3	38	1024	63897	5	1	1	0
14	1280x1024_____50	52	116	250	1280	1	3	38	1024	53299	5	1	1	0
15	VESA_1280x960__60	96	112	312	1280	1	3	36	960	60002	5	1	1	0
16	1280x960____59.94	96	112	312	1280	1	3	36	960	59941	5	1	1	0
17	1280x960_____50	96	112	312	1280	1	3	36	960	50000	5	1	1	0
18	EIA_1260x946___30	44	136	164	1260	8	8	61	473	30692	5	1	1	1
19	EIA_1164x874___30	36	112	140	1164	6	6	59	437	28342	5	1	1	1
20	SUN_1152x900___66	30	128	194	1152	2	4	31	900	61797	5	1	1	0
21	APPLE_1152x870_75	32	128	144	1152	3	3	39	870	68681	5	1	1	0
22	VESA_1152x864__75	64	128	256	1152	1	3	32	864	67503	5	1	1	0
23	EIA_1080x809___30	26	96	118	1080	6	6	54	404	26244	5	1	1	1
24	1024x768_____100	24	136	160	1024	3	6	29	768	80606	5	1	1	0
25	VESA_1024x768__85	48	96	208	1024	1	3	36	768	68681	5	1	1	0
26	VESA_1024x768__75	16	96	176	1024	1	3	28	768	60024	5	1	1	0
27	VESA_1024x768__70	24	136	144	1024	3	6	29	768	56478	5	0	0	0
28	VESA_1024x768__60	24	136	160	1024	3	6	29	768	48365	5	0	0	0
29	1024x768____59.94	24	134	158	1024	3	6	29	768	48311	5	0	0	0
30	1024x768_____50	24	136	160	1024	3	6	29	768	40303	5	0	0	0
31	VESA_1024x768__43	8	176	56	1024	0	8	41	384	35601	5	1	1	1
32	EIA_900x674____30	20	64	80	900	5	5	45	337	21870	5	1	1	1
33	APPLE_832x624__74	32	64	224	832	2	3	38	624	49716	5	1	1	0
34	EIA_832x624____30	16	56	64	832	5	5	41	312	20253	5	1	1	1
35	800x600_____100	32	96	128	800	1	2	22	600	62500	5	1	1	0
36	VESA_800x600___85	32	64	152	800	1	3	27	600	53673	5	1	1	0
37	VESA_800x600___75	16	80	160	800	1	3	21	600	46875	5	1	1	0
38	VESA_800x600___72	56	120	64	800	37	6	23	600	48079	5	1	1	0
39	VESA_800x600___60	40	128	88	800	1	4	23	600	37880	5	1	1	0
40	800x600_____59.94	40	128	88	800	1	4	23	600	37642	5	1	1	0
41	VESA_800x600___56	24	72	128	800	1	2	22	600	35156	5	1	1	0
42	800x600_____50	32	96	128	800	1	2	22	600	31250	5	1	1	0
43	PAL_768x576____25	44	140	168	1536	5	5	39	288	15625	5	0	0	1
44	640x480_____100	16	96	48	640	10	2	33	480	52501	5	0	0	0
45	VESA_640x480___85	56	56	80	640	1	3	25	480	43269	5	0	0	0
46	VESA_640x480___75	16	64	120	640	1	3	16	480	37500	5	0	0	0
47	VESA_640x480___72	24	40	128	640	9	3	28	480	37860	5	0	0	0
48	VESA_640x480___60	16	96	48	640	10	2	33	480	31473	5	0	0	0
49	640x480_____59.94	16	96	48	640	10	2	33	480	31473	5	0	0	0
50	640x480_____50	16	96	48	640	10	2	33	480	26250	5	0	0	0
51	NTSC_640x480___30	44	112	104	1280	6	6	29	242	15734	5	0	0	1
52	VESA_720x400___85	36	72	108	720	1	3	42	400	37927	5	0	1	0
53	VESA_640x400___85	32	64	96	640	1	3	41	400	37860	5	0	1	0
54	VESA_640x350___85	32	64	96	640	32	3	60	350	37860	5	1	0	0
55	1280x768_____56	48	112	248	1280	1	3	30	768	45116	5	0	0	0
56	1280x720_____100	110	40	220	1280	5	5	20	720	75001	5	0	0	0
57	1280x720_____60	108	40	214	1280	5	5	20	720	45000	5	0	0	0
58	1280x720____59.94	112	40	224	1280	5	5	20	720	44955	5	0	0	0
59	1280x720_____50	110	40	220	1280	5	5	20	720	37500	5	0	0	0
60	852x480_____60	20	66	52	852	6	6	33	480	31491	5	0	0	0
61	852x480____59.94	20	66	52	852	6	6	33	480	31468	5	0	0	0
62	1360x1024__75.1	32	136	272	1360	3	3	35	1024	80000	5	1	1	0
63	1360x768__60	92	40	276	1360	3	6	18	768	47700	5	1	1	0

FIGURE 5.   The Host List

HostLOAD <1...63>

Loads the indicated host from the list (Figure 5).

HostName <name>

Names the current host. <name> can be up to 17 alphanumeric characters, with no spaces. The **HostSave** command must be used to save the **HostName** information.

HostSave <1...10>

Saves the current host settings into the Host List (Figure 5). The argument <1…10> specifies which Host List position is used. When the **HostSave** command is issued, the information specified in the **HostTiming** command is stored in the Host List.

HostTiming <HFP> <HS> <HBP> <HACT> <VFP> <VS> <VBP> <VACT> [<HFREQ> <SYNC> <HPOL> <VPOL> <IL>]

Sets the timing for the current host. The definition and range of each argument is:

HFP	• horizontal front porch	(0…640)	pixels
HS	• horizontal sync	(16…640)	pixels
HBP	• horizontal back porch	(0…640)	pixels
HACT	• horizontal active	(16…1280)	pixels
VFP	• vertical front porch	(0…512)	lines
VS	• vertical sync	(2…32)	lines
VBP	• vertical back porch	(0…512)	lines
VACT	• vertical active	(12…1024)	lines
HFREQ	• horizontal frequency in Hz	(15…90)	kHz
SYNC	• sync format	3, 4, or 5	wires
HPOL	• horizontal sync polarity	(1/0)	
VPOL	• vertical sync polarity	(1/0)	
IL	• interlaced/non-interlaced	(1/0)	

DIGITAL OUTPUT AND HOST TIMING

The only way to adjust the digital output is by manipulating the horizontal and vertical active **HostTiming** values. Adjusting front and back porch blanking values will have no effect on the digital display.

Factory default: Host 11, 1280x1024, 75 Hz, 5-wire sync (RGBHV)

OPTimize <ON|OFF>

Improves the horizontal resolution. This command is useful when the display device is a CRT and the output resolution (host) is less than 1280 x 1024 pixels. If the display is a discrete (sampled) device, such as an LCD or DLP, and you turn **OPTimize ON**, you may get a modulus mismatch, creating vertical banding.

Factory default: OFF

IMAGE POSITIONING AND VISIBILITY

This section contains commands for controlling the display configuration, zoom and pan operations, and freezing inputs.

DoubleBuffer <input#> <ON|OFF>

The double buffering feature eliminates pointer crossover. This is a visual artifact which can be visible in imagery containing horizontal motion—for example, a camera panning from left to right—or scene changes. It appears as a brief, horizontal break in the picture. Your eye may not discern it, but what you are seeing is a portion of one frame of video and a portion of another.

With **DoubleBuffer ON**, pointer crossover is eliminated. The tradeoff is that horizontal motion may appear a little jerkier. **DoubleBuffer** is applicable to both RGB and video inputs. When setting **DoubleBuffer** for input 1, first select the specific input type with the **INputType** command.

Factory default: ON

DualView <NORMAL|STRETCH|CROP>

The **DualView** command sets the display to a two-window configuration. The inputs are positioned side-by-side on the output. The left-right assignment is made with the **DualViewMap** command.

The argument used determines the aspect ratio of the windows (Figure 6). With <NORMAL>, the windows are automatically set to the correct aspect ratio based on the host timing. With <STRETCH>, the windows are stretched vertically. With a 16:9 output host, the windows will fill the screen. With a 4:3 host, the windows are stretched vertically but take up only a 16:9 portion of the 4:3 output display. With <CROP>, the windows are stretched vertically as with <STRETCH>, but in order to maintain the correct aspect ratio, the inputs are cropped by 20% on the left and right.
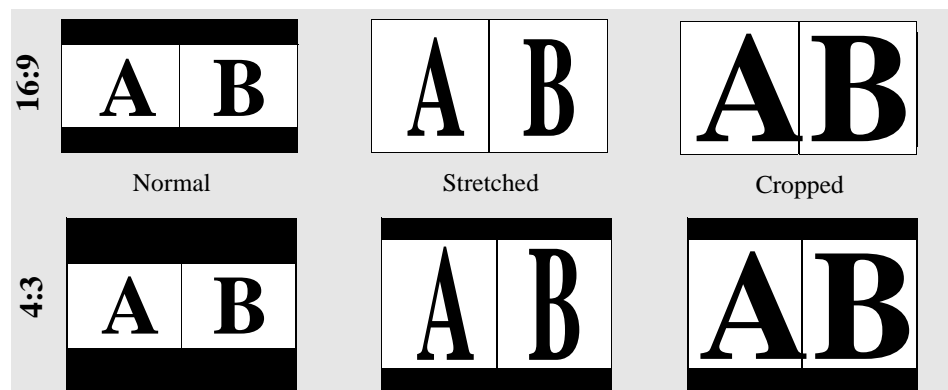

FIGURE 6. DualView Modes—16:9 and 4:3 Displays

DualView is an alternative display configuration command to **FullScreen**.

```
DualViewMap <1|2> <1|2>
```

This command sets up the input/window mapping assignment for the three DualView display modes. Both assignments are required, and neither input can be repeated.

The arguments are in left to right order, and refer to the inputs. For example, if you send the command "**DVM 2 1**", input 2 would appear in the left window and input 1 would appear in the right.

The **DVM** assignment is saved in NVRAM.

Factory default: 1 2

```
FADE <rgb1|rgb2|COMPOSITE|COMPONENT|SVIDEO|
     DVN|DVS|DVC|Black>
```

The **FADE** command is used to perform a controlled fade from one display mode to another. With **FADE**, you can switch between any of the five (two RGB and three video) inputs full screen, or to a DualView split screen format, or to black.

The **FADE** argument represents the fade target—what is displayed at the end of the fade action. If you select one of the DualView displays (<DVN>, <DVS>, or <DVC>), the **INputType** command (see page 16) controls which input appears in input 1.

The duration of the fade is controlled by the **TransitionTime** command (see page 23).

```
FreeZe <input#|ALL> <ON|OFF>
```

Turns freeze status of the selected input on or off. If **FreeZe** is set to <ON>, **BRIght**, **CONTrast**, and **GAMma** commands are delayed until **FreeZe** is turned <OFF>. The freeze status is maintained through switches between display configurations (for example, **FullScreen** to a **DualView** split screen), as it is the input that is frozen—not the output.

Factory default: OFF

```
FullScreen <input#|Black>
```

The **FullScreen** command is used to set a single input to a full screen display. The <input#> determines which input is displayed full screen. If input 1 is selected, the **INputType** setting (see command detail on page 16) determines which of the four possible signals—RGB or a video type—is made full screen.

The argument <Black> results in a blank screen—no inputs are visible.

FullScreen is an alternative display configuration command to **DualView**.

```
OVERSCAN <input#> <ON|OFF>
```

OVERSCAN is used to automatically affect a 2% zoom on all video inputs of the specified channel. **OVERSCAN** does not affect **WSR** values. This command is only valid for video input option board channels.

OVERSCAN is useful to trim off ragged edges of video signals, such as the head switching effect often seen with video cassette recorders.

Factory default: OFF

PAN <input#>

Activates the pan utility for the selected input. If input 1 is selected, the **INputType** setting (see command detail on page 16) determines which of the four possible signals—RGB or a video type—is made full screen.Only a zoomed input can be panned. The controls for the utility are:

i = pan up

j = pan left   **l** = pan right

m = pan down

•••

q = quit

•••

If the response to pan control appears delayed, check the **AUTOSAVE** state. If **AUTOSAVE** is set to <ON> you may encounter sluggish and jerky response with the pan utility. Please read the details on the **AUTOSAVE** command before changing the state. See **AUTOSAVE <ON|OFF>** on page 27.

•••

PictureInPicture <foreground input#> <background input#> [<x> <y> <width> <height>]

This command puts the DualView in picture-in-picture mode. The foreground window will be superimposed on the background window. The size and position of the foreground window can be determined by adding the optional parameters, x-position, y-position, width, and height.

Once the DualView is in PIP mode, you can use the **Size** and **Position** commands to adjust the two windows. This capability allows endless possibilities for window size and positioning.

POSition <input#>

Activates the position utility, allowing you to move the specified input around the output display. The controls for the utility are as follows:

i = move up   **m** = move down

j = move left   **l** = move right   **q** = quit

Position affects the **WDR** values for the input.

RSR <input#>

This command resets the source rectangle (**WSR**) to default values. **RSR** "unzooms" a zoomed image. **RSR** also resets bright, contrast, gamma, hue, saturation, and sharpness to default values.

For video, **RSR** resets the source rectangle to 720x480 for NTSC and 720x574 for PAL. For RGB inputs, the source rectangle resets to the HACT and VACT measurements of the specified input signal, as reported in the **INput** and **INputTiming** commands.

SIZE <input#>

Activates the size utility, allowing you to resize the specified input window. The controls for the utility are as follows:

s = smaller   **l** = larger

q = quit

Size affects the **WDR** value for the input.

TransitionTime <1.5...20.0>

TransitionTime controls the duration of the **FADE** command action. The argument is in seconds.

Factory default: 1.5

WINdow <input#|ALL> <ON|OFF>

The **WINdow** command is used to turn off one or all inputs.

If **WINdow** is <OFF> and the input to that channel is removed and reapplied within two seconds then the status remains off. If **WINdow** is <ON> and signal is removed for more than two seconds the window status switches to <OFF>. When an input is later reapplied, the window status reverts to <ON>. This allows for the use of a switcher and maintaining the desired on/off status. It also means that when a previously unused channel is used, the window automatically turns on to display the newly acquired input.

The **WIN ALL** command can be used to turn all windows on or off simultaneously.

Factory default: ALL ON

WDR <input#> <x> <y> <width> <height>

This command sets both the position and size of an input's destination rectangle. The <x> and <y> arguments represent the monitor coordinates of the rectangle's top left corner, but hardware limitations may cause the actual placement to differ slightly from that specified. (When you read WDR for any window, the numbers given accurately reflect the state of the hardware.)

The <width> and <height> arguments represent the pixel width and line height of the destination rectangle. The rectangle can be positioned and sized so that part of it is positioned off the screen. WDR is limited to the output resolution of the DualView (full screen display).

This command can be best utilized when the DualView is in picture-in-picture mode. The **WDR** command will allow you to designate any size and position for the two input windows—for example, the division line between the two inputs does not have to be restricted to the center line of the output display.

WSR <input#> <x> <y> <width> <height>

WSR sets the source rectangle for the selected input. Default values for RGB inputs are equal to the HACT and VACT measurements of the specified input signal. For video, **WSR** defaults to 720x480 for NTSC and 720x574 for PAL.

The source rectangle is used to zoom in or out in an image. At the default values, the entire input signal is visible. The <x> and <y> coordinates represent the screen starting point from which to draw the supplied values of <width> and <height>.

Example—To zoom in on the upper left quadrant of an 800x600 input, the **WSR** values are:

```
>wsr <input#> 0   0   400   300
```

To display only the bottom right quadrant, the **WSR** values are:

```
>wsr <input#> 400   300   400   300
```

The full, default source rectangle for this 800x600 input is:

```
>wsr <input#> 0   0   800   600
```

WSR resets to defaults whenever the signal is acquired or reacquired. That is, if you remove or replace the input signal, or if you change the input type selection on a single channel with the **INputTYPE** command, then **WSR** resets to the default values for the newly acquired signal.

ZooM <input#>

ZooM activates the zoom utility. It affects the **WSR** value for the input. The zoom utility controls are:

i = zoom in **o** = zoom out **q** = quit

The maximum zoom is limited in all cases to no more than two times the original image. Not all inputs will generate a 2X zoom ratio, however. The amount of available zoom range is dependent on the pixel rate of the input signal. See "Zoom Range" on page 25 for further details.

ZooM resets to an unzoomed state whenever the signal is acquired or reacquired. That is, if you remove or replace the input signal, or if you change the input type selection on a single channel with the **INputTYPE** command, then **ZooM** resets to the default values for the new signal.

• •

If the response to zoom control appears delayed, check the **AUTOSAVE** state. If **AUTOSAVE** is set to <ON> you may encounter sluggish and jerky response with the zoom utility. Please read the details on the **AUTOSAVE** command before changing the state. See **AUTOSAVE <ON|OFF>** on page 27.

• •

ZOOM RANGE

The DualView has a limited zoom range. There is a maximum of a 2X zoom, and the actual amount of zoom varies with the input signal. The higher the pixel rate of the input signal the lower the zoom range.

The maximum input pixel rate for the DualView is 140MHz. If the pixel rate of your input equals 140MHz there will be no zoom range available. For signals of less than 140MHz pixel rate there will be an available zoom percentage. At a pixel rate of 70MHz or less, the zoom range will be 2X.

IMAGE CONTROLS

In general, all image control settings are stored in the EEPROM and therefore retained through power cycles (depending on **AUTOSAVE** setting or use of **SAVECONFIGURATION** command). For RGB inputs, when an RGB input is saved to the Input List with the **INputSave** command, the parameters for **BRIght**, **CONTrast**, and **GAMma** are saved along with the **InputTiming** information. For video inputs, one set of image parameter information is saved automatically for each input.

BRIght <input#|ALL> <-500...500>

Sets the brightness of the selected input. The <ALL> argument queries or sets brightness for both inputs. The value is automatically saved with the **INputSave** command.

Factory default: 0

CONTrast <input#|ALL> <0...200>

Sets the contrast of the selected input. The <ALL> argument recalls or sets contrast for both inputs. The value is automatically saved with the **INputSave** command.

Factory default: 100

GAMma <input#|ALL|DV> <0.5...2.0>

Sets a unique gamma value of the selected input when displayed full screen. The <ALL> argument queries or sets gamma for both inputs. The value is automatically saved with the **INputSave** command.

When the <DV> argument is used, yet another gamma value is created. The gamma is explicitly for side-by-side (**DualView**) display modes. This is to ensure an even gamma setting for the multiple input display.

Factory default: 1.0

HUE <input#> <-180...180>

Sets the color hue of the selected input. Zero is the nominal setting for all video input types.

HUE is only valid for video inputs; it has no effect on RGB inputs.

Factory default: 0

SATuration <input#> <0...200>

Sets the color saturation level of the selected input. 100 is the nominal setting.

Saturation and contrast levels are interrelated. When the contrast level is changed, the saturation level will track with it. For example, if you increase **CONTrast** by 10, **SATuration** will likewise increase linearly with **CONTrast** but at a varying slope depending on the **SHARPness** setting and input video mode. Ultimately, we maintain proper RGB output levels reducing differential gain and phase errors. This keeps the values at a set relationship. If desired, after setting **CONTrast**, you can set **SATuration** directly to achieve an offset from **CONTrast**.

SATuration is only valid for video inputs; it has no effect on RGB inputs.

Factory default: 100

SHarpness <input#> <0|1|2|3>

Sharpness is a trade-off between sharpness and aliasing. The nominal setting (<2>), represents the most pleasing compromise. For increased sharpness—and increased aliasing—select a higher value for **SHARPness**. For decreased aliasing—and decreased sharpness—select a lower value.

Factory default: 2

MISCELLANEOUS

AUTOSAVE <ON|OFF>

The **AUTOSAVE** feature automatically stores the system configuration approximately every 10 seconds. This process stores configuration information such as Host List and Input List data, Host settings, and display parameters.

AUTOSAVE allows the user to turn the NVRAM automatic update mode on or off. Without the argument, the command returns the current state.

Even if **AUTOSAVE** is set to <OFF>, **BAUDrate** and **AUTOSAVE** commands are still written to the NVRAM automatically. With **AUTOSAVE** set to <OFF>, use the **SAVECONFIGURATION** command to perform manual NVRAM updates.

> The **AUTOSAVE** feature can cause sluggish response to some DualView controls, particularly interactive timing adjustment, and zoom and pan operation. While the **AUTOSAVE** feature is useful during setup of the system, is it best set to <OFF> during live presentations.

Factory default: OFF

DEMO

DEMO runs the built-in demo sequence. Type "**q**" to quit demo.

The demo is a looping display script which alternates between full screen and dual view display modes.

Help [<command_name>]

Help lists all of the commands and their arguments.

Help <command_name> returns usage information on the specified command.

ID

> **ID** displays the product identification—product name, firmware version # and date, serial number, and input channel information. For both inputs, the available input format is reported. A sample response to the **ID** command is:

> TYPE DualView
> MFG_DATE 8/1/2000
> SERIAL_NUMBER 68XXX
> FIRMWARE_REVISION V1.50
> Input 1: RGB /VIDEO
> Input 2: RGB

RestoreFactoryDefaults

> This command restores the factory defaults. In the process, the Host and Input lists are cleared, and all image parameters are set to nominal values. The output is set to Host 11, a 1280 x 1024 pixel resolution signal, at 75 Hz.

SAVECONFIGURATION

> The **SAVECONFIGURATION** command is generally used when the autosave feature is turned off. (See the **AUTOSAVE** command, on page 27.)

> Issuing this command forces an update of the system's NVRAM. This stores configuration information such as Host List and Input List data, Host settings, and display parameters.

STATus

> **STATus** returns status information on the DualView and current settings.

> A sample response is:

> Host timing is:
> NUM NAME HFPHS   HBPHACTVFPVSVBPVACT HFREQ SYNC HPOL VPOL IL
> 11 VESA_1280x1024 16144248128013381024799805110

> View is:
> Output mode: DualView
> Window status: ON ON

> Input status:
> Input: 1
> MODE auto
> AUTOSYNC_STATE acquire_start
> NUM NAME   HFP HS HBP HACTVFP VS VBP VACTHFREQSYNCHPOLVPOLIL
> 0 ---
> Input: 2
> MODE auto
> AUTOSYNC_STATE locked
> NUM NAME   HFP HS HBP HACTVFP VS VBP VACTHFREQSYNCHPOLVPOLIL
> 0 Auto_1   64 128256 12803 4 45 1024 79365 3   0   0   0

TestPattern <ON│OFF>

> This command turns the internal test pattern (color bars) on and off.

> Factory default: OFF

VERSION

VERSION returns firmware, hardware, and bootcode revision information.

SERIAL PORT FUNCTIONS

BAUDrate <1200|2400|9600|19200|38400|57600|115200>

This command sets the serial port baud rate. The value is saved automatically in NVRAM.

Factory default: 9600

ECHO <ON|OFF>

ECHO turns the serial echo on and off. The value is saved in NVRAM. The echo is only on commands typed and sent to the unit. Note: the **ECHO** setting has no effect on responses issued by the DualView; responses are always visible, regardless of **ECHO** status.

Factory default: ON