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Folsom RESEARCH

INSTALLATION AND OPERATOR'S MANUAL



Model 2100DE

VFC-2100DE– Scaler with Digital Effects

Manual #26-6092936-00 / Revision A

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RECORD OF CHANGES

REV #	DATE	ECO #	DESCRIPTION	Approved By
A	5/2002	860	Release to Production	A.Y.

Manual # 26-6092936-00

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Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels
There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source
This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product
This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord
Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse
To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres
To avoid explosion, do not operate this product in an explosive atmosphere.

WARNING

The rear panel ON/OFF switch does not disconnect the unit from input AC power. To facilitate disconnection of AC power, the power cord must be connected to an accessible outlet near the unit. Building Branch Circuit Protection: For 115 V use 20 A, for 230 V use 8 A.

WARNING

When the VFC-2100DE is used in the 230-volt mode, a UL listed line cord rated for 250 volts at 15 amps must be used and must conform to IEC-227 and IEC-245 standards. This cord will be fitted with a tandem prong-type plug.

Terms In This Manual

WARNING — *Highlights an operating procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.*

NOTE — *Highlights an essential operating procedure, condition, or statement.*

CAUTION — *The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.*

AVERTISSEMENT! — *Le point d´exclamation dans un triangle equilatéral signale à alerter l´utilisateur qu´il y a des instructions d´operation et d´entretien tres importantes dans la litérature qui accompagne l´appareil.*

VORSICHT — *ein Ausrufungszeichen innerhalb eines gleichwinkeligen Dreiecks dient dazu, den Benutzer auf wichtige Bedienungs-und Wartungsanweisungen in der Dem Great beiliegenden Literatur aufmerksam zu machen.*

Terms As Marked on Equipment

WARNING — *Highlights an operating procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to or death of personnel.*

CAUTION — *The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.*

AVERTISSEMENT! — *Le point d´exclamation dans un triangle equilatéral signale à alerter l´utilisateur qu´il y a des instructions d´operation et d´entretien tres importantes dans la litérature qui accompagne l´appareil.*

VORSICHT — *ein Ausrufungszeichen innerhalb eines gleichwinkeligen Dreiecks dient dazu, den Benutzer auf wichtige Bedienungs-und Wartungsanweisungen in der Dem Great beiliegenden Literatur aufmerksam zu machen.*

NOTE *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.*

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CHAPTER ONE
Introduction

What you will find in this chapter…

- *About the VFC-2100DE*
- *Features*
- *Technical Description*

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SCALER WITH DIGITAL EFFECTS

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Introduction

About the VFC-2100DE

The VFC-2100DE can be used whenever it is necessary to convert high-resolution video from one format to another or to edge-blend high-resolution computer-generated images. Typical applications include:

- Conversion of high-resolution computer-generated signals to alternate user-defined output formats such as 875-line (RS-343A) format for simulation and training applications.
- Interlaced-to-non-interlaced and non-interlaced-to-interlaced format conversion.
- Continuous real-time image pan and zoom to support applications such as head-tracked displays.
- Edge-blending to support seamless multi-screen presentations.

The VFC-2100DE allows the user to control all aspects of the scan conversion process via user-friendly front panel menus or remotely through the serial control interface that can be configured for RS-232 or RS-485 operation. Examples of the type of control provided include continuous pan and zoom capability to permit conversion of areas of interest in the source video and adjustable horizontal and vertical filters. The unit can store up to ninety-six user-specified configurations in nonvolatile memory for subsequent recall.

Attention to the Installation and Operation Sections of the manual is important to ensure trouble-free operation. Should you have any questions regarding the operation of this unit, please consult the factory.

Features

The VFC-2100DE provides and offers the following features:

- Automatically locks to RGB video sources with resolutions up to 2048 x 1280.
- User-programmable RGB output supports resolutions up to 1280 x 1024.
- Supports input and output of interlaced or noninterlaced video.
- Supports user-defined output window size and location or full screen output.
- Fully programmable, smooth "camera like" pan and zoom functions.
- Image resizing via proprietary digital signal processing techniques.
- User-friendly front panel interface.
- Reconfigurable RS-232 or RS-485 serial port supports real-time control of image processing functions with low latency.
- Nonvolatile storage of configuration data.
- Built-in test pattern generator.
- User-programmable edge-blending supports seamless multi-screen presentations.

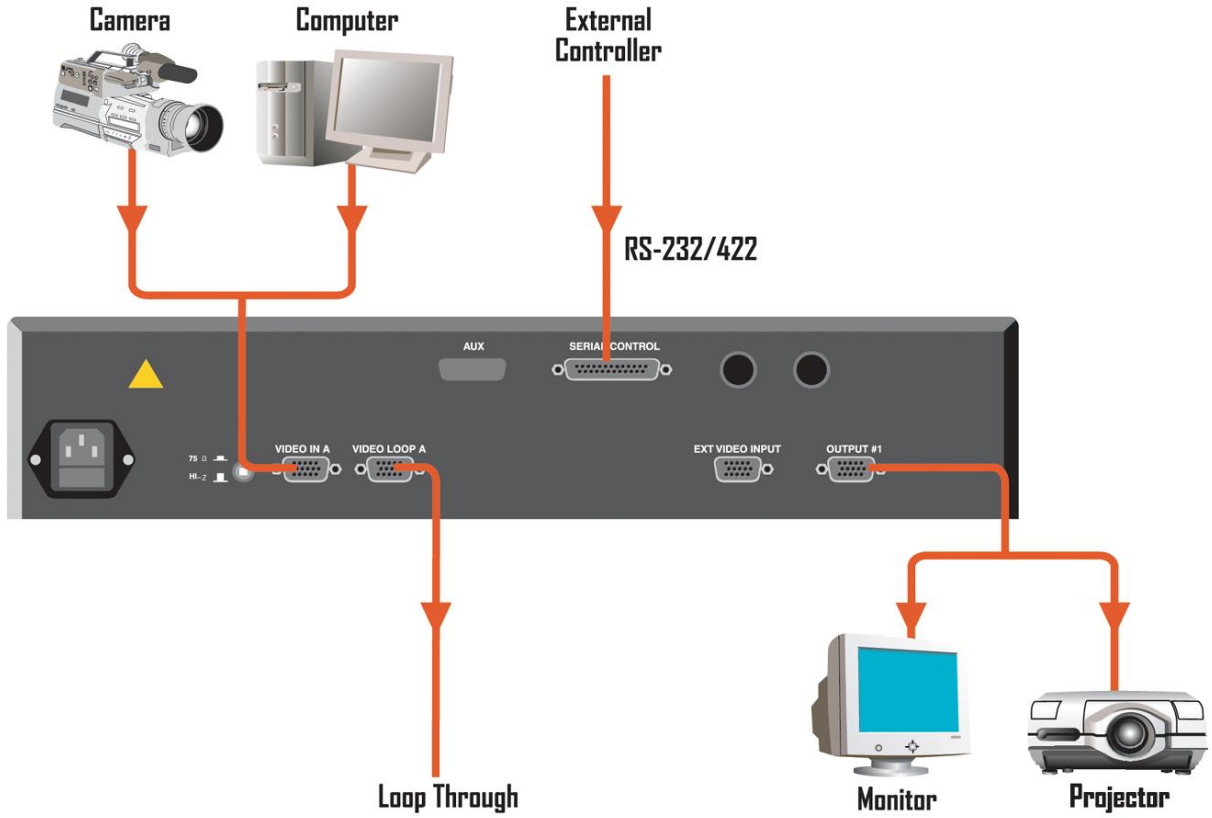
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Technical Description

The VFC-2100DE Video Format Converter automatically locks to interlaced and non-interlaced videos with horizontal scan rates up to 95 kHz. The video scaler supports conversion of videos with resolutions up to 2048 x 1280. The unit processes the incoming video to derive an RGB output image in the video format selected by the operator. Output video timing parameters are user-programmable. Both interlaced and non-interlaced video output formats with resolutions up to 1280 x 1024 are fully supported.

The VFC-2100DE supports continuous pan and zoom functions. The operator selects the portion of the input image to be processed. This input area of interest may consist of the full image or a selected input "window". The video within the input area of interest may be rescaled to fill a selected output window or the entire output display. Pan and zoom parameters are fully programmable and are entered in single-pixel increments to support smooth real-time pan and zoom operations.

The VFC-2100DE is controlled via user-friendly front panel menus or in real time using a serial control link. The user can control all aspects of the scaling process through either of these interfaces..



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CHAPTER TWO
Installation

What you will find in this chapter…

- *Line Voltage Selection*
- *Video Input Connections*
- *Video Output Connections*

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Installation

NOTE: Front Panel features are shown on page 14

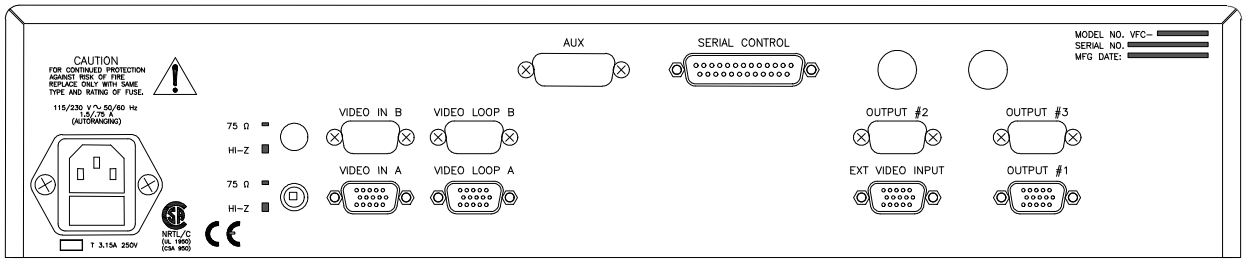


Figure 2-1: VFC-2100DE Rear Panel

Rear Panel Connectors:

- AC Power connector
- Video Input HD-15 connectors
- Video Output HD-15 connectors
- Serial Control Connector

All video connections must be made with VGA cables

Rack-Mount Installation

VFC-2100DE units are designed to be rack mounted and are supplied with front rack-mount hardware. Rear rack-mount brackets are available as a kit and are recommended for use when units are mounted in transit cases. When rack mounting the unit, remember that the maximum ambient operating temperature for the unit is 40 degrees C. Leave at least one inch of space front and rear to make sure that the airflow through the fan and vent holes is not restricted. When installing equipment into a rack, distribute the units evenly to prevent hazardous conditions that may be created by uneven weight distribution. Connect the unit only to a properly rated supply circuit. Reliable grounding (earthing) of rack-mounted equipment should be maintained.

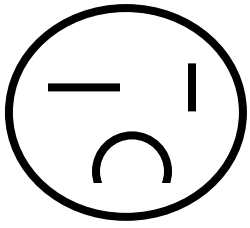
Power Cord/Line Voltage Selection

VFC-2100DE is rated to operate with the following supplies:

Input Power:	115-230 VAC, 47-63 Hz
Power Consumption :	125 watts maximum

The VFC-2100DE performs line voltage selection automatically. No user controls are required for line voltage selection.

WARNING When the VFC-2100DE is used with 230-volt supplies, a UL listed line cord rated for 250 volts at 15 amps must be used. This cord will be fitted with a tandem prong-type plug.



Tandem Plug

AVERTISSEMENT!

La choix de la ligne de voltage se realize automatiquement par l'VFC-2100DE Transformateur Graphique On n'apas besoin du controller usager pour la choix de la ligne de voltage.

VORSICHT

Das VFC-2100DE-Gerät mu beim Anschlu an 240V ~ mit einer vom VDE auf 250V/10A geprüften Netzleitung mit einem Schukostecker ausgestattet sein.

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Video Input Connections

The video input section on the VFC-2100DE rear panel contains one pair of 15-pin SUB-D input connectors.

1) If you are using a PC with a 15-pin VGA connector, connect the video output of the PC to the 15-pin SUB-D connector input labeled “Video In A” on the VFC-2100DE rear panel.

2) If video inputs will be looped through the VFC-2100DE to a high resolution graphics monitor, connect the input of the VGA monitor to the 15-pin SUB-D connector input labeled “Video Loop A” on the VFC-2100DE rear panel.

3) You will need to select the input port and termination via the VFC-2100DE rear panel switch. It is important to have the termination set correctly for each installation. If the termination is not set correctly, the unit may not work properly. Generally, the VFC-2100DE is installed between the computer workstation and the computer monitor. In this case, the termination setting should be set to *HI-Z*. Monitors typically either have built-in 75-ohm termination or have a provision to terminate or un-terminate at the monitor via switches or a BNC loop-through. **Termination should always be at the end of the video chain**.

Video Output Connections

RGB Video Output: Connect the output device to Output #1 on the output section of the VFC-2100DE rear panel. Select the desired output format via the front panel menus or serial link.

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CHAPTER THREE
Operation

What you will find in this chapter…

- *Main Menu Operation*
- *Video Input Configuration Menu*
- *Input Raster Size/Position Menu*
- *Input Levels/Color Space Adjustment Menu*
- *Output Configuration Menu*
- *Zoom/Pan Menu*
- *Mixer Control Menu*
- *Special Functions Menu*
- *Video Messages*
- *Factory Reset*

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Operation

After connecting the VFC-2100DE to the graphics workstation and the desired video output device as described in the prior sections, plug the unit into the designated AC power source. Locate the power switch on the front panel and turn the VFC-2100DE on.

The display shown below will appear for one to two seconds on VFC-2100DE LCD display. Note that the revision number displayed will reflect the revision of the currently installed software.

```
FOLSOM RESEARCH INC.
  2100 VFC - XXX.XX.X
        VIDEO
   FORMAT CONVERTER
```

While the VFC-2100DE is initializing, the following display will be shown.

```
FOLSOM RESEARCH INC.
  2100 VFC - XXX.XX.X
  INITIALIZING
      PLEASE WAIT...
```

When the initialization is complete, the *Main* Menu will be displayed.

```
VFC 2100
F    IN A:<##-AAAAAAAA>
TR
TP   OUT: <##-AAAAAAAA>
```

If the VFC-2100DE does not detect or recognize video on an input port, it will display the *VIDEO ERROR* Menu (see page 27). Press any key to clear the error message.

Menu Operation

The VFC-2100DE is controlled via a 4 x 20 LCD display and six control keys: *Menu Up (MENU↑)*, *Menu Down (MENU↓)*, *Item Up (ITEM↑), Item Down (ITEM↓)*, *ON/+*, and *OFF/-*. The Menu key allows the user to cycle through the VFC-2100DE menus. When the last menu is reached and the Menu key is pressed, the VFC-2100DE will return to the first menu. Each menu contains 1 to 17 fields, which can be selected and edited by the user. The selected field will be bracketed by < >. By pressing the *ITEM↑* and *ITEM↓* keys, the user can move the brackets to the other fields in the menu. The *ON/+* and *OFF/-* keys allow the user to toggle on and off or increment and decrement the selected field as well as descend into other sub-menus.

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Main Menu Operation

```
VFC 2100
FR  IN:  <##-AAAAAAAA>
TP  OUT: <##-AAAAAAAA>
```

The main menu for the VFC-2100DE conveys information concerning both the input and output video. The letters *"F_R"* will appear before the *IN A* field if the input video is currently in Freeze Mode. If the letters *"T_P"* appear next to the *OUT* field then the Test pattern is enabled.

Within the *IN A* and *OUT* fields, the letters *FC, XX* or a number between 1 and 96 will be displayed before the configuration name. This indicates which configuration is currently being used, where *FC* stands for "Factory Configuration". If an asterisk *"*"* appears between the configuration number and the video description, then the current configuration has been modified without that modification having been saved. When *"XX"* shows before the configuration name, then the user has deleted a configuration from the input or output library while the configuration is in use. While this is a valid operation, the *"XX"* is indicating that the current configuration is not available for recall should the user modify its parameters.

Pressing the *ON/+* or *OFF/-* key while the *IN A* field is bracketed will bring the user to the Input Configuration Scaler Menu. If the *ON/+* or *OFF/-* key is pressed when the *OUT* field is bracketed, the user will be brought to the Output Configuration Menu (see section 6.3.2).

Video Input Configuration Menu

```
INPUT CFG.  SCLR          <X>
  SAVE/RECALL             <+>
  RASTER SIZE/POS         <+>
  LEVELS/CSC              <+>
  FILTERING               <+>
  FREEZE                <AAA>
  SYNC SELECT           <N/A>
  AUTO SYNC ONCE        <N/A>
```

This menu is used to configure the input video source for *IN A* or *IN B*. In the top right corner of the display, the letter *A* or *B* will be displayed. Pressing the *ON/+* or *OFF/-* key while the brackets are around the *A* or *B* will allow the user to select which input video source is currently being modified, saved or recalled. In addition, the four Input Configuration sub-menus shown above also allows the user to change which input video source is being modified, by following the procedure described above.

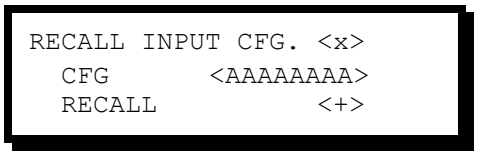
Input Configuration Save/Recall Menu

```
SAVE/RECALL SCLR  <A>
  CURR CFG <AAAAAAAA>
  SAVE CURR CFG   <+>
  DELETE A CFG    <+>
  EDIT PARAMS     <+>
  REACQUIRE INPUT <+>
```


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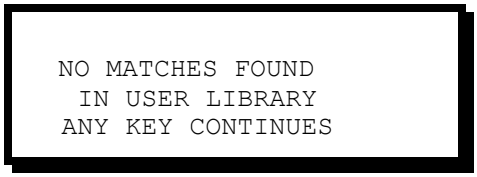
Using this menu, the user can save, recall, delete and edit user configuration files. The VFC-2100DE can store 96 user configurations. The *CURR CFG* field tells the user which input configuration is currently being used.

Recall Input Configuration

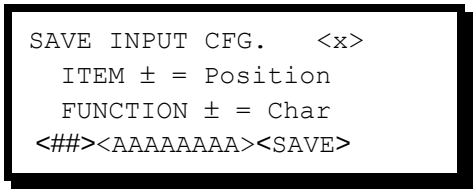


By pressing the *ON/+* key while the brackets are around the *CURR CFG* field, the user has the option of choosing a saved input configuration for recall. If AutoSync (see page 26) is on, then the user will only see those saved configurations that match the current timing parameters connected to the system. In order to see the entire list of saved configurations, the Autosync feature must be turned off.

Using the *ON/+* or *OFF/-* keys when the *CFG* field is bracketed, the VFC-2100DE will scroll through the saved configurations. Once a configuration has been chosen and the *RECALL* field has been selected, pressing the *ON/+* key will recall the configuration for immediate use by the system. If there are no configurations in the user library that match the timing of source currently connected to the system or if the user library is empty, the message shown below will be displayed upon trying to enter the Recall Menu.



Save Current Input Configuration



This menu allows the user to save an input video. When the ## field is bracketed, the user can choose a configuration number between 1 and 96 by pressing the *ON/+* or *OFF/-* keys. The *AAAAAAAA* field is a comment field, which can contain an alphanumeric description of the input video. When this field has brackets around it, the *Item Up (ITEM↑)* and *Item Down (ITEM↓)* keys will move the cursor within the field. Once the cursor is in the desired location, pressing the *ON/+* or *OFF/-* keys will allow the user to scroll through the alphanumeric characters available. The character set is comprised of *1 - 9* and *A – Z*.

The VFC-2100DE distinguishes configurations only by the configuration number; therefore various saved configurations can have the same description. Once the configuration number and description have been entered, make sure the brackets are around the *SAVE* field and then press the *ON/+* key on the front panel to save the configuration. When the configuration has been saved the VFC-2100DE will return to the previous menu and the *CURR CFG* field will show the description of the saved configuration.

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Delete Input Configuration

```
DEL INPUT CFG.          <x>
  CFG                <AAAAAAAA>
  DELETE                 <+>
```

When the VFC-2100DE is displaying this menu, the user has the option of choosing a saved input configuration for deletion. By pressing the *ON/+* or *OFF/-* keys when the *FORMAT* field is bracketed, the VFC-2100DE will scroll through the user library. Once a configuration has been chosen and the *DELETE* field has been selected, pressing the *ON/+* key will permanently delete the configuration from the system. If there are no configurations in the user library, the message shown below will be displayed upon trying to enter the Delete Menu.

```
USER LIBRARY EMPTY

  ANY KEY CONTINUES
```

Edit Input Configuration

```
EDIT INPUT
  H FREQ             [#####]
  H TOTAL             <####>
  H ACTIVE            <####>
  H FP                 <###>
  V FREQ             [#####]
  V TOTAL             [####]
  V ACTIVE            <####>
  V FP                  <##>
  INTERLACED           [AAA]
  VID LEVEL           <###>
  PEDESTAL            <###>
  CLAMP GATE          <####>
  AR                 <#.###>
  RESET                 <+>
```

This menu is used to adjust the input video parameters. If anything within this menu is modified, the user must put the brackets around the *"+"* in the *APPLY* field and press the *ON/+* key for the change to take effect.

The Horizontal and Vertical parameters can be adjusted to match the incoming video sent to the VFC unit. Those fields shown above with square brackets are not adjustable. Horizontal and Vertical frequencies are display in units of Hertz. *H TOTAL*, *ACTIVE* and *FP* (Front Porch) are shown in units of pixels while the vertical equivalents are in units of lines. The *INTERLACED* field will show *NON* for non-interlaced video and *2:1* for interlaced video. *VID LEVEL* is in units of mV and should be adjusted to match the source level going into the system. *PEDESTAL* is in units of mV and should be adjusted to match the pedestal level on the source video signal.

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The three options for *CLAMP GATE* are *SYNC*, *BP* and *DLY*. Set this field to the appropriate option per the conditions outlined below.

BP Used for the majority of video types. When this option is selected, the VFC will DC Restore to the Back Porch of the video signal.

SYNC Select this option when the input video has no or a short back porch. This option is only valid when the source contains separate syncs. If there is sync on the video, the user should not select this option.

DLY Use this option when the video contains tri-level sync, for example HDTV. In this case the VFC unit will delay the DC Restore pulse on the back porch.
Use the *AR* field to adjust the input Aspect Ratio. The field is shown in decimal form and is calculated as follows:

Ex. 4:3 = 4/3 = 1.333

To fill the output screen and avoid black bars along the sides or top of the final image, match the output aspect ratio to the input (see section 6.3.2.1.4)

The *OVR SAMPLE* field is used to adjust the number of input samples taken by the VFC unit. For example, if the input contains 1000 Horizontal Active pixels and the *OVR SAMPLE* field is set to 1.50, then the number of samples taken on the input is 1500 (1000 X 1.50).

Reacquire Input

Pressing the *ON/+* or key while the *REACQUIRE INPUT* field is bracketed will allow the user to reacquire the input on either Scaler A or Scaler B.

Input Raster Size / Position Menu

```
INPUT SIZE/POS
  RIGHT EDGE          <±>
  LEFT EDGE           <±>
  TOP                 <±>
  BOTTOM              <±>
  AR              <#.###>
  AR BOX             <NA>
  RESET               <+>
```

The *IN RSTR SIZE/POS* menu shown above allows the user to adjust the size and position of the incoming video for final display.

Left and Right Edge, Top and Bottom Adjustments

The first four menu options in the Size and Position Menu allow the user to fine-tune the size of the image edges. By placing the brackets around the field that needs to be adjusted, the user can press the *ON/+* or *OFF/-* keys to move the edge of the image to a desired position.

Input Aspect Ratio

Pressing the *ON/+* or *OFF/-* key while the *AR* is field is bracketed will allow the user to increment and decrement the Input Aspect Ratio. This option is available in order to distort the aspect ratio of the input image.

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Reset Input Size / Position Adjustments

Pressing the *ON/+* key while the *RESET* field is bracketed will reset the input video configuration back to the original saved values. Therefore, if you are working with a user configuration and a modification to the Size / Position is made, using the reset option will restore the video to its original settings before the modification.

Input Levels / Color Space Adjustment Menu

```
INPUT VID LVLS
  CONTRAST          <###%>
  BRIGHTNESS        <###%>
  COLORSPACE      <AAAAA>
  COLOR BALANCE       <+>
```

The *IN LVLS/CSC* Menu shown above allows the user to fine-tune the input video levels as well as choose the proper color space. These adjustments should only be made if required and can cause some artifacts if made improperly.

Input Contrast / Brightness Adjustment

Pressing the *ON/+* or *OFF/-* key while *CONTRAST* or *BRIGHTNESS* is bracketed will allow the user to increment and decrement these values.

Input Color Space

Pressing the *ON/+* or *OFF/-* key while the *COLORSPACE* field is bracketed will allow the user to scroll through the various color space options. The available choices are *RGB*, *BETA50*, *BETA60*, *MII, EBU and S274*.

Refer to the table below for the levels expected for each color space option.

Note: For the RGB color space, the video levels expected are variable due to the different defined standards.

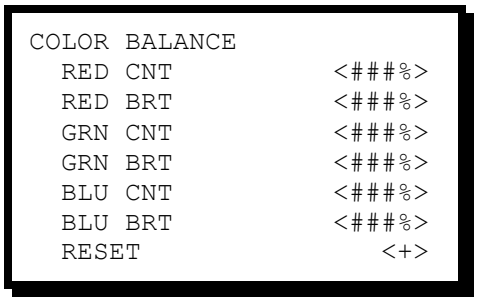
Color Space	*Y*	*B-Y*	*R-Y*
BETA	1.0V p-p	.934V p-p	.934V p-p
BETA60	1.0V p-p	.934V p-p	.934V p-p
MII	1.0V p-p	.900V p-p	.900V p-p

Color Space	*Y*	P_b	P_r
EBU	1.0V p-p	.700V p-p	.700V p-p
S274 (HDTV)	0.7V p-p	± 0.35V	± 0.35V

Table 1 – Expected Levels for Input Color Space Options

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Input RGB Color Balance



NOTE: This menu only displays when the *COLORSPACE* option is set to *RGB.*

Pressing the *ON/+* key while the *COLOR BALANCE* field is bracketed will bring the user to the menu shown above. Using this menu, the user can adjust the contrast and brightness for each of the separate primary colors. The *ON/+* or *OFF/-* key is used to increment or decrement the field that is bracketed.

Input RGB Color Balance Reset

Pressing the *ON/+* key while the *RESET* field is bracketed will reset the input RGB Color Balance configurations back to a value of 100%.

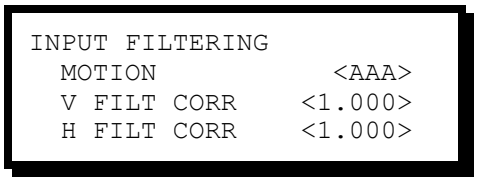
Input NON-RGB Color Balance



NOTE: This menu only displays when the *COLORSPACE* option is set to a Non-RGB color space.

Pressing the *ON/+* key while the *COLOR BALANCE* field is bracketed will bring the user to the menu shown above. Using this menu, the user can adjust the saturation of the input video. The *ON/+* or *OFF/-* key is used to increment or decrement the *SATURATION* field when it is bracketed. The *RESET* option will return the *SATURATION* field back to 100%.

Input Motion Filtering Menu



Using this menu to activate the Motion Filter will result in a sharper image if an input video is interlaced **and** contains motion. Pressing the *ON/+* or *OFF/-* key while the *MOTION* field is bracketed will set the Motion Filter state to *ON* or *OFF,* respectively.

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Horizontal and Vertical Filter Correction

Adjusting the filter corrections to a number less than 1.00 will result in a sharper image, while numbers greater than 1.00 will soften the image. Softening the Vertical Filter can be done to reduce flicker. Making adjustments to the filters may cause artifacts to appear.

Freeze Input Image

Pressing the *ON/+* and *OFF/-* keys while the *FREEZE* field is bracketed (see section 6.3.1) will enable (turn *ON*) and disable (turn *OFF*) the input frame freeze mode respectively. When freeze mode is enabled, $^{F}_{R}$ is displayed next to the *IN A* field.

Output Configuration Menu

```
OUTPUT CONFIG
  SAVE RECALL              <+>
  RASTER POS               <+>
  SYNC TYPE                <+>
  LEVELS GAMMA             <+>
  GENLOCK                  <+>
  TEST PATTERN             <+>
```

Using the OUTPUT CONFIG menu, the user can adjust the output video parameters such as size, position, video levels and gamma. This menu is also used to save and recall output video configurations.

Output Save / Recall Menu

```
SAVE/RECALL OUTPUT
  CURR CFG          <AAAAAAAA>
  SAVE CURR CFG            <+>
  DELETE A CFG             <+>
  EDIT PARAMS              <+>
```

Using this menu, the user can save, recall, delete and edit user configuration files. The VFC-2100DE can store 96 user output configurations. The *CURR CFG* field tells the user which output configuration is currently being used. Pressing the ON/+ key while this field is bracketed will bring the user to the Recall Output User Configuration Menu.

Recall Output User Configuration

```
REC OUT USER CFG
  LIBRARY          <AAAAAAA>
  CFG             <AAAAAAAA>
  SELECT                <+>
```

When the VFC-2100DE is displaying this menu, the user has the option of choosing a saved Output configuration for recall. By pressing the *ON/+* or *OFF/-* keys when the *LIBRARY* field is bracketed, the VFC-2100DE will allow the user to choose between the *FACTORY* or *USER* libraries. The Factory library contains the following entries:

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VFC Name	Resolution	Horizontal Frequency	Aspect Ratio	Interlace	Sync Type	Color Space	Video Level	Pedestal Level	SOG Level
720p_59	1280 x 720	44.955kHz	16:9	1:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
720p_60	1280 x 720	45.000kHz	16:9	1:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
1024_30	1280 x 1024	33.972kHz	5:4	2:1	SOG	RGB	660mV	54mV	286mV
1024_60	1280 x 1024	63.735kHz	5:4	1:1	SOG	RGB	700mV	0mV	300mV
1035i	1920 x 1035	33.750kHz	16:9	2:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
1080i_50	1920 x 1080	32.000kHz	16:9	2:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
1080i_59	1920 x 1080	33.716kHz	16:9	2:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
1080i_60	1920 x 1080	33.750kHz	16:9	2:1	Tri-Lev. SOG	YUV	700mV	0mV	300mV
525_170A	720 x 484	15.734kHz	4:3	2:1	SOG	RGB	660mV	54mV	286mV
625_50	702 x 525	15.625kHz	4:3	2:1	SOG	RGB	700mV	0mV	300mV
768_60	1024 x 768	48.780kHz	4:3	1:1	SOG	RGB	700mV	0mV	286mV
875RS343	1078 x 809	26.253kHz	4:3	2:1	SOG	RGB	660mV	54mV	286mV
SVGA-50	800 x 600	37.879kHz	4:3	1:1	H & V	RGB	700mV	0mV	0mV
SXGA-50	1280 x 1024	63.900kHz	5:4	1:1	H & V	RGB	700mV	0mV	0mV
VGA-50	640 x 480	31.469kHz	4:3	1:1	H & V	RGB	700mV	0mV	0mV
XGA-50	1024 x 768	48.780kHz	4:3	1:1	H & V	RGB	700mV	0mV	0mV

Table 2 – Factory Output Configurations

To access the Factory configurations, make sure the *LIBRARY* field has been changed to the *FACTORY* option. By pressing the *ON/+* or *OFF/-* keys when the *CFG* field is bracketed, the VFC-2100DE will scroll through the factory library choices. Once a configuration has been chosen and the *SELECT* field has been bracketed, pressing the *ON/+* key will recall the configuration for immediate use by the system.

The same procedure is used for selecting user configurations after the *LIBRARY* field has been set to *USER*. If there are no configurations in the user library, the menu will appear as shown below.

```
RECALL OUTPUT CFG
  LIBRARY          <USER>
  CFG               EMPTY
  SELECT              <+>
```


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Save Current Output Configuration

```
SAVE OUTPUT CFG
  ITEM ± =      Position
  FUNCTION ± =      Char
<##><AAAAAAAA>   <SAVE>
```

This menu allows the user to save an Output video configuration. When the ## field is bracketed, the user can choose a configuration number between 1 and 96 by pressing the *ON/+* or *OFF/-* keys. The *AAAAAAAA* field is a comment field, which can contain an alphanumeric description of the Output video. When this field has brackets around it, the *Item Up (ITEM↑)* and *Item Down (ITEM↓)* keys will move the cursor within the field. Once the cursor is in the desired location, pressing the *ON/+* or *OFF/-* keys will allow the user to scroll through the alphanumeric characters available. The character set is comprised of *1 - 9* and *A – Z*.

The VFC-2100DE distinguishes configurations only by the configuration number; therefore various saved configurations can have the same description. Once the configuration number and description have been entered, make sure the brackets are around the *SAVE* field and then press the *ON/+* key on the front panel to save the configuration. When the configuration has been saved the VFC-2100DE will return to the previous menu and the *CURR CFG* field will show the description of the saved configuration.

Delete Output Configuration

```
DEL OUTPUT CFG
  CFG           <AAAAAAAA>
  DELETE                <+>
```

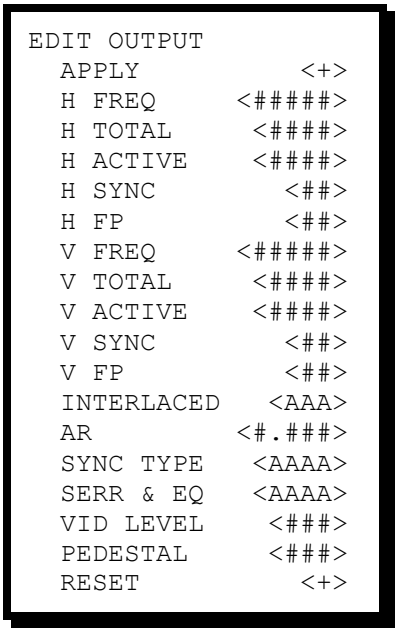
When the VFC-2100DE is displaying this menu, the user has the option of choosing a saved Output configuration for deletion. By pressing the *ON/+* or *OFF/-* keys when the *CFG* field is bracketed, the VFC-2100DE will scroll through the user library. Once a configuration has been chosen and the *DELETE* field has been selected, pressing the *ON/+* key will permanently delete the configuration from the system. If there are no configurations in the user library, the message shown below will be displayed upon trying to enter the Delete Menu.

```
    USER LIBRARY EMPTY

    ANY KEY CONTINUES
```


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Edit Output Configuration



This menu is used to adjust the output video parameters. If anything within this menu is modified, the user must put the brackets around the *"+"* in the *APPLY* field and press the *ON/+* key for the change to take effect.

The fields shown above are adjustable to the preference of the user. Horizontal and Vertical frequencies are display in units of Hertz. *H TOTAL*, *ACTIVE* and *FP* (Front Porch) are shown in units of pixels while the vertical equivalents are in units of lines. The *INTERLACED* field can be changed to *NON* for non-interlaced video or *2:1* for interlaced video.

Use the *AR* field to adjust the output Aspect Ratio. The field is shown in decimal form and is calculated as follows:

Ex. 16:9 = 16/9 = 1.777

To fill the output screen and avoid black bars along the sides or top of the final image, match the output aspect ratio to the input (see section 6.3.2.1.4)

SYNC TYPE options are as follows: *-H-V*, *-H+V*, *+H-V*, *+H+V*, *-C (negative composite sync)*, *GR (sync on green)* and *3LEV* (tri-level sync).

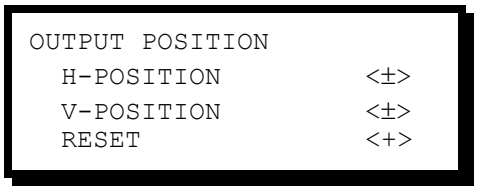
Use the *SERR & EQ* field to tell the VFC unit to generate serration or equalization pulses. The available options are *NONE*, *SERR*, *EQ* or *BOTH*.

VID LEVEL can be adjusted to an adequate level acceptable to the main output device. This parameter is in units of mV.

PEDESTAL is in units of mV and can be used to add or subtract setup from the video levels. Setup in video is defined as the small level difference between black video and the blanking level. This is inserted as a guard interval to ensure separation of the synchronizing and video information and to provide adequate blanking of the scanning retrace lines.

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Output Position



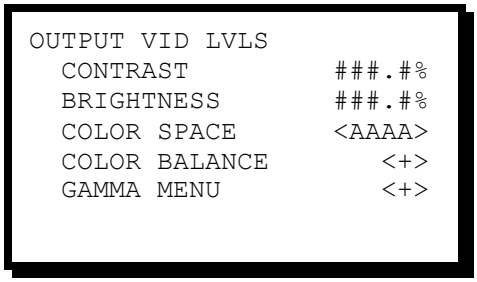
Using this menu, the VFC-2100DE will allow the user to fine-tune the position of the output display. Pressing the *ON/+* or *OFF/-* keys while the *H-POSITION* field is bracketed will adjust the display horizontally left or right across the screen. Using the same procedure while the *V-POSITION* field is bracketed will adjust the display vertically up or down on the screen. If the *RESET* field is selected and the *ON/+* key is pressed, the image will return to the position before any adjustments were made.

Sync Type

The Output Sync Type can be selected when this field is bracketed. The different types of Sync are:

GR = Sync is on Video
-C = Negative Composite
H, V = Separate Horizontal Sync
Vertical Sync Positive or Negative
3LED = Tri-level Sync-On-Green Video

Output Levels/Gamma Menu

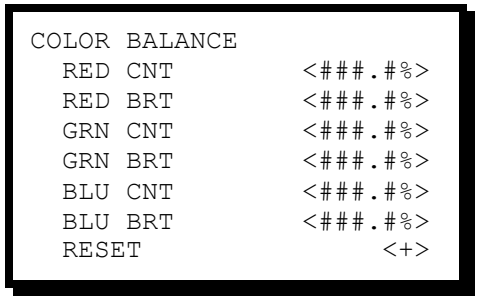


The *OUTPUT LVLS* Menu shown above allows the user to fine-tune the output video levels as well as adjust color balance and gamma. These adjustments should only be made if required and can cause some artifacts if made improperly. Contrast and brightness adjustments are common.

Color Space

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Color Balance



Pressing the *ON/+* key while the *COLOR BALANCE* field is bracketed will bring the user to the *COLOR BALANCE* menu shown above. Using this menu, the user can adjust the contrast and brightness for each of the separate primary colors. The *ON/+* or *OFF/-* key is used to increment or decrement the field that is bracketed. Pressing the *ON/+* key while the *RESET* field is bracketed will reset the output Color Balance configurations back to a value of 0.0%.

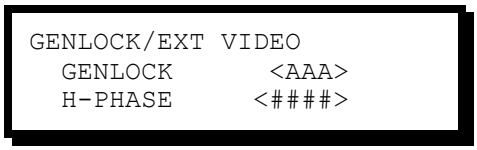
Gamma Correction Menu



As the voltage to a display is increased, the light intensity (brightness) increases in a nonlinear fashion. Taking the video signal voltage level and raising it to some power calculate light intensity. The exponent that the voltage level is raised to is known as gamma. By gamma correcting at the output, linear light intensity is converted to a nonlinear video signal; i.e. a gamma curve is applied to the output.

Pressing the *ON/+* or *OFF/-* keys while the *GAMMA* field is bracketed will increase or decrease the gamma factor. A gamma of 1.00 will tell the VFC unit not to perform any gamma correction. Once the gamma has been set, put the brackets around the *APPLY* field and press the *ON/+* key initiate the gamma correction

Genlock Menu



Genlock is a term used to describe the process by which one video signal is synchronized to another of the same timing and format. If desired, the VFC output can be Genlocked to an externally applied sync source. The output of the video sync generator utilized to drive the VFC must be on the Green channel and connected to the connector labeled *EXT VIDEO INPUT* on the VFC's rear panel.

Genlock Control

Pressing the ON/+ and OFF/- keys while the GENLOCK field is bracketed will enable (turn ON) and disable (turn OFF) the Genlock option.

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Horizontal Phase

The horizontal phase adjustment allows the user to advance or delay the VFC encoded composite signal in relation to the Genlock signal.

Output Test Pattern

```
OUT TEST PATTERN
  MODE           <AAA>
  TYPE < AAAAAAAAAAA>
  INVERT         <AAA>
  GRID           <AAA>
  RASTER BOX     <AAA>
```

The *OUT TEST PATTERN* menu shown above allows the user to place a test pattern on the main output device. This menu is also used to choose the type and/or invert the test pattern. A test pattern box and grid can also be enabled and disabled from within this menu.

Output Test Pattern Mode

Pressing the *ON/+* or *OFF/-* key while the *MODE* field is bracketed will enable (*ON*) or disable (*OFF*) the test pattern on the main output screen. The currently selected test pattern is displayed when test pattern is enabled. While the test pattern is enabled, $^{T}_{P}$ will be displayed in the lower left corner of the main menu (see section 6.3). While the test pattern is on, COLOR BARS test pattern type will be displayed on the preview monitors (Outputs #2 and #3).

Output Test Pattern Type

Pressing the *ON/+* or OFF/- key while the *TYPE* field is bracketed will allow the user to scroll through the available test patterns. The name of the test pattern will be display within the TYPE field. If the test pattern mode is enabled, the test pattern displayed reflects the currently selected test pattern. The following test patterns can be selected:

VER GRILL
HOR GRILL
XOR BURST
VER BURST
HOR BURST
COLOR BARS
VER GRAY
HOR GRAY
BLACK

Inverting Output Test Pattern

Pressing the *ON/+* or OFF/- key while the *INVERT* field is bracketed will allow the user to enable (*ON*) or disable (*OFF*) the inversion of the test pattern and grid if enabled (see below).

Grid Test Pattern

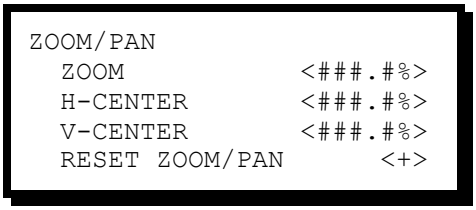
Pressing the *ON/+* or OFF/- key while the *GRID* field is bracketed will allow the user to enable (*ON*) or disable (*OFF*) the grid test pattern. When enabled, the grid will display over the currently selected test pattern. To view the grid pattern on a white background, set the *TYPE* field to *BLACK* and enable the *INVERT* option described above.

Raster Test Pattern Box

Selecting the *BOX* field and pressing the *ON/+* key enables the test pattern box. Pressing the *OFF/-* key while this field is bracketed will disable the test pattern box. The box will be displayed on the main output device. The size of the box is determined by the output configuration and can be used to size and place the image correctly on the screen.

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Zoom/Pan Menu



The *ZOOM/PAN* menu allows the user to zoom in and out of the input image shown in the top right corner of the display and to pan the image around on the output screen horizontally and vertically.

Zoom

Pressing the *ON/+* or *OFF/-* key while the *ZOOM* field is bracketed will allow the user to zoom in and out of the input image.

The limiting amount of zoom possible is functions of the video parameters of the input image source, output display format, and under scan. Therefore, different combinations of these parameters will yield a different maximum standard zoom. The standard zoom function allows the user to zoom in on an input image up to the point where the maximum input bandwidth is selected. The user may zoom in on an input image beyond the maximum standard zoom setting, an extended zoom is provided. When the zoom goes into extended zoom mode, an *X* is displayed in front of the *ZOOM* field in the *ZOOM/PAN* menu.

Horizontal Center

Pressing the *ON/+* key while the *H-CENTER* field is selected will pan the input image horizontally to the right. Pressing the *OFF/-* key will pan the input image to the left. The percentage, relative to the center of the screen, will update as the image pans.

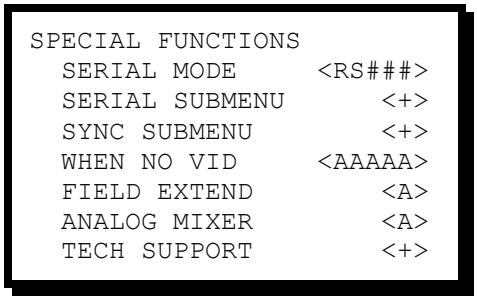
Vertical Center

Pressing the *ON/+* key while the *V-CENTER* field is selected will pan the input image vertically down. Pressing the *OFF/-* key will pan the image up. The percentage, relative to the center of the screen, will update as the image pans.

Zoom/Pan Reset

Pressing the *ON/+* key while the *RESET ZOOM/PAN* field is selected will reset the zoom horizontal and vertical pan positions to 100.0%, 0.0% and 0.0%, respectively.

Special Functions Menu



The *SPEC. FUNCTIONS* menu allows the user to select options which are not frequently used.

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Serial Mode

The serial mode the VFC unit is currently communicating in is displayed in the SERIAL MODE field. If the field shows <*RS232*>, then the *RS-232 PORT MENU* will be displayed upon entering the *SERIAL SUBMENU*. If the field shows <*RS485*>, the *RS-485 PORT MENU* will be displayed when descending into the *SERIAL SUBMENU*.

Serial Submenu

Using this menu, the communication parameters for RS-232 or RS-485 can be adjusted to match the settings of the DTE device. As mentioned above, the menu displayed upon entering the *SERIAL SUBMENU* will depend on the *SERIAL MODE* setting.

RS-232 Port Menu

Pressing the ON/+ key while the *SERIAL SUBMENU* field is bracketed will display the following menu if the serial mode is set to <*RS232*>.

```
RS-232 PORT MENU
  ECHO                <AAA>
  BAUD RATE          <####>
  BITS/CHAR.            <#>
  STOP BIT              <#>
  PARITY             <AAAA>
  RESET RS-232          <+>
```

The settings for the RS-232 port can be adjusted to match the user's RS-232 settings.

The RS-232 can be set up to echo back characters by pressing *ON/+* or not echo characters by pressing *OFF/-* when the *ECHO* field is bracketed. The baud rate can be adjusted to 9600, 19.2K, 38.4K, 57.6K or 115K baud by pressing the *ON/+* and *OFF/-* keys when the *BAUD RATE* field is bracketed. The number of bits per character can be 7 or 8 and is toggled by pressing the *ON/+* and *OFF/-* keys when the *BITS/CHAR.* field is bracketed. When the *STOP BIT* field is bracketed, the number of stop bits can be toggled between 1 and 2 by pressing the *ON/+* and *OFF/-* keys. The parity can be set to odd, even, or none when the *PARITY* field is selected and the *ON/+* and *OFF/-* keys are pressed.

Pressing the *ON/+* key when the *RESET RS-232* field is bracketed will briefly display a RS-232 reset message and reset the values to the following defaults: echo on, 38.4K baud, 8 bits per character, 1 stop bit, and no parity.

The RS-232 port has 1024-character buffers for the input and output ports. Hardware flow control should be used to prevent these buffers from overflowing. Hardware flow control uses the RTS/CTS lines (always active).

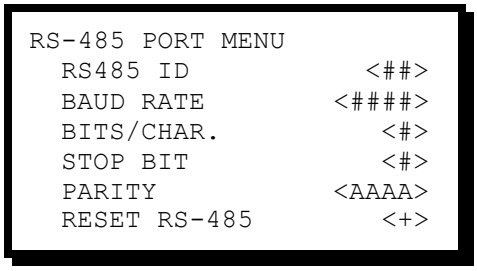
Should the input buffer become full, the next character received will cause an overflow condition. The VFC-2100DE will respond by flushing the input buffer.

If flow control is not going to be used, the software should wait for the prompt character (#) before sending the next command to the VFC-2100DE. This procedure will guarantee that an overflow condition will not occur.

RS-485 Port Menu

Pressing the ON/+ key while the *SERIAL SUBMENU* field is bracketed will display the following menu if the serial mode is set to <*RS485*>.

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When using RS-485 to control multiple VFC units, each unit must be assigned a unique ID number. With brackets around the *RS485 ID* field, press the *ON/+* key to advance the ID number. The *OFF/-* key will decrease the ID number field. The user has the option of choosing an ID number between 1 and 32.

Sync Submenu

Pressing the ON/+ key while the *SYNC SUBMENU* field is bracketed will display the following RS-232 menu.



Autosync Status

If the user wants to disable the Autosync feature of the VFC-2100DE, press the *OFF/-* key while the *AUTOSYNC* field is bracketed. To enable Autosync, press the *ON/+* key while this field is selected.

Sync Messages

To disable the messages the VFC-2100DE displays when sync is lost on an input, press the *OFF/-* key while the *SYNC MESSAGES* field is bracketed. To enable the sync messages, press the *ON/+* key while this field is selected.

Loss of Video Signal Configuration

The *WHEN NO VID* field tells the VFC unit what to do in the event the video signal is lost on one or both of the inputs. The options and their meanings are as follows:

LIVE The VFC unit will continue to try and process any signals coming into the unit.

BLANK In the event of signal loss, the output screen will go to black.

FREEZ When the signal is lost, the last image on the screen will remain unit the video signal is restored. Artifacts may appear in the frozen image.

Field Extend Option

Folsom Research reserves this option for future use. Setting this option to Y or N will not affect the operation of the VFC-2100DE unit.

Analog Mixer Option

Note: Available only when option has been installed by the factory.

Pressing the ON/+ key while the *HUD MIXER* field is bracketed will display the following RS-232 menu.

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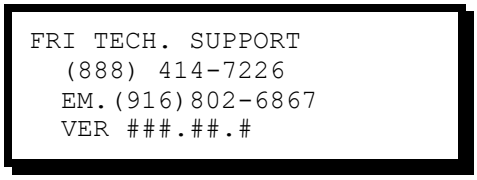


Video Contrast / Brightness Adjustment

Pressing the *ON/+* or *OFF/-* key while *X VID CONT* (Range: 0% to 125%) or *X VID BRIGHT* (Range: 100% to 125%) is bracketed will allow the user to increment or decrement these values.

Technical Support Menu

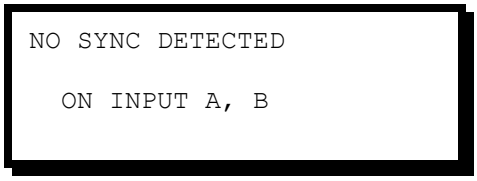
Pressing the ON/+ key while the *TECH. SUPPORT* field is bracketed will display the following menu.



Video Messages

The following menus are displayed when an error is encountered with recognizing or detecting video, or there is an error with the VFC-2100DE unit.

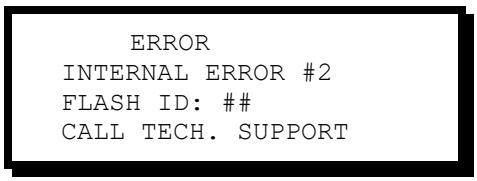
Video Error



This message is displayed if the VFC-2100DE could not detect a valid video source on either input. The message will modify itself to list only one input not being detected if such an event occurs. If *GL* appears in the list, then Genlock is enabled (see section 6.3.2.4) and there is no source available on the EXT VIDEO INPUT connector (see Figure 5-1). This same message will appear if there is video but the VFC-2100DE does not recognize the format. This message box can be disabled within the Autosync menu (see section 6.5.3).

If you encounter this message, you should verify the connection between the VFC-2100DE and the input source. Pressing any key will bypass this message and bring the user to the Main menu.

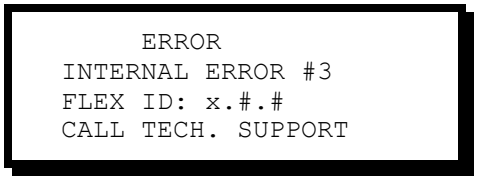
Internal Error #2



This menu displays when a file in the flash memory component has become corrupted. If the message persists after cycling the power on the VFC-2100DE unit, call FRI support and provide the FLASH ID number shown.

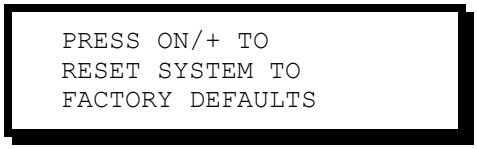
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Internal Error #3



This message is displayed when there is an internal device programming error. If the message flashed and the normal start up message appears, then the system is okay. If the message remains displayed, cycle the power on the VFC-2100DE unit. If the message persists, call FRI support and provide the FLEX index number shown.

Factory Reset



Holding down the *MENU* ↑ key while powering up the VFC-2100DE will access this menu. Pressing the *ON*/+ key will cause the VFC-2100DE to restore the factory defaults and clear all 96-user input/output configurations from memory. Pressing any other key will cancel the Reset operation.

After Reset, in the Test Pattern Menu (page 23), enable TEST PATTERN, then disable GRID and RASTER BOX. Disable TEST PATTERN.
.

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CHAPTER FOUR
RS-232 & RS-485 Interface Control

What you will find in this chapter…

- *Computer Control via the RS-232 and RS-485 Interface*
- *RS-232 Command Format Definition*
- *RS-485 Command Format Defintion*

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Computer Control Via the RS-232 & RS-485 Interface

This section of the Operation manual is intended to assist programmers with developing software to control the VFC-2100DE remotely (from an external computer) via the serial control interface. The information provided includes:

1) RS-232 and RS-485 connector pinout/interface signal definition
2) RS-232 and RS-485 port configuration instructions
3) The VFC-2100DE command format definition
4) A detailed description of all the VFC-2100DE commands.

RS-232 and RS-485 Connector Pinout/Interface Signal Definition

Interface Type: Serial conforming to EIA RS-232, EIA-422-A and EIA-485 specifications.
Connector Type: DB-25 (female)
Signal Levels: +/-12V
Maximum Interface Cable Length for RS-232: 75 feet
Maximum Interface Cable Length for RS-422/485: 4000 feet

Serial Control Rear Panel Connector Signal Definition

Data Communications Equipment (DCE)

Pin	RS-232 Signal	RS-485 Signal	Direction
1	Shield	Shield	
2	Transmit Data TXD	Transmit Data TX(A)	Input
3	Receive Data TXD	Receive Data RX(A)	Output
4	RTS	RTS(A)	Input
5	CTS	---	Output
6	DSR	---	Output
7	Ground	Ground	
8	DCD	DCD(A)	Input
9	---	---	
10	---	DCD(B)	Input
11	---	---	
12	---	ST(B)	Output
13	---	---	
14	---	TX(B)	Input
15	---	ST(A)	
16	---	RX(B)	Output
17	---	---	
18	---	---	
19	---	RTS(B)	Input
20	DTR	---	Input

Notes:

- Pins 21 – 25 are No Connect
- Direction is specified with respect to the VFC-2100DE unit

Serial Port Configuration Instructions

The VFC-2100DE's default setup is RS-232 mode at 38.4K baud, 8 data bits, 1 stop bit, and no parity. The baud rate and other RS-232 parameters may be changed in the *RS-232 PORT* menu via the front panel.

RS-232 Command Format Definition

Command Format

The VFC-2100DE's command format is divided into four sections: the mnemonic, the command delimiter, the operand, and a carriage return. The mnemonic consists of two to six ASCII characters. The command delimiter is an

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ASCII blank space. The operand, consisting of ASCII characters, provides required and optional parameters for the command. Note that on some commands an operand is not needed. The carriage return terminates the command.

VFC-2100DE's Prompts and Responses

After the VFC-2100DE receives a command it will respond by transmitting one of the following messages:

- '#': Command completed, ready for next command.
- '?' followed by a LF/CR and a '#': Did not understand last command or could not complete command.
- '=': Inquiry processed, data to follow this '='. The length of the data stream depends upon the command sent. The data stream is followed by a LF/CR and a '#'.

Power-up Banner

When the VFC-2100DE is powered-up, it will transmit a banner followed by '#'. This signifies that the VFC-2100DE is ready for commands. The banner is:

VFC-2100DE Software Version 119.21.0

RS-485 Command Format Definition

The command syntax for a single command is shown below:

*cds***id**cmd arg1 arg2 arg3..argn*cde*

Cds *Cds* is the command delimiter start character '*' (ASCII 42).

Id Id is the device number in the range of 1 to 32. This can be a single character for values less than 10; no preceding zero is required.

Cmd Cmd is any valid VFC command, typically 2 to 6 characters in length

Arg Arg1, 2, n is any required or optional parameters need for the command

Cde *Cde* is the command delimiter end character '!' (ASCII 33).

Example: To adjust the horizontal center 10% to the right relative to its current position on Scaler B, the command format would be:

*2AOIHC R 10 B! *Assuming the device id is set to 2.*

To minimize bus traffic the command words will be kept as short as possible. The units will not respond with prompts or any command error conditions. Echo will be disabled when the RS422 or 485 modes are selected.

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CHAPTER FIVE
VFC-2100DE Commands

What you will find in this chapter…

- *VFC-2100DE Commands*
- *VFC-2100DE Command List/Description*

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VFC-2100DE Commands

AOIHC	This command is obsolete. Use ZM command.
AOIHV	This command is obsolete. Use ZM command.
AOIVC	This command is obsolete. Use ZM command.
AOIWD	This command is obsolete. Use ZM command.
AOIWN	This command is obsolete. Use ZM command.
CHR c	Echo Character Command: c[Alph. Char.]
CMDST?	Last Command Status
CRP clr op rt lt tp bt	Crop Command: op[M|I|D], rt, lt, tp, bt[0-100]
DEBUG?	Debug Inquiry
DFRMT?	Data Format
DL op nn sclr	Download CFG: op[I|O] (I)nn[0-16] (O) nn[0-96] sclr[A]
ECHO n	RS232 Echo: n[0|1], OFF|ON
EFLDL	Factory Use Only
EFLUL	Factory Use Only
EFT s e w u x	Edge Feather: side[L|R], e[0|1], width, usermode, exponent
FLDEXop	Field Extend: op[DIE]
FPLCK?	Front Panel Lock
FREEZ n sclr	Freeze On/Off: n[0|1], OFF|ON sclr[A]
FSM no-op	Flight Safety Command: no-op
GLENA n	Genlock: n[0|1], Disable|Enable
GLHPH nnn	Genlock H Phase nnn[0-63]
HELP i	Help Command: i[A-Z], Help Index
IAR n.nnn sclr	Input Aspect: Ratio(n.nnn): n[0-5.000] sclr[A]
IARB n sclr	Input Aspect Ratio Box: n[0|1], OFF|ON sclr[A
IARR op n.nnn sclr	Input Aspect Ration Relative: op[I|D] n.nnn[0-5.0] sclr[A]
IBRT op nnn sclr	Input Brightness: op[C|R|G|B|I|D] c[75 - 125]% RGB[-25 - 25]% sclr[A]
ICDEL nn	Input Configuration Delete: n[CNF Index]
ICGTE n sclr	Input Clamp Gate: n[0-2], SYNC|PRCH|DLY sclr[A]
ICNT op nnn sclr	Input Contrast: op[C|R|G|B|I|D] c[75 - 125]% RGB[-25 - 25]% sclr[A]
ICREC nn sclr	Input Configuration Recall: n[CNF Index] sclr[A]
ICSAV nn s[8] sclr	Input Configuration Save: n[CNF Index] s[Name] sclr[A]
ICSP n sclr	Input Colorspace: n[0-5,254,255], RGB|B50|B60|MII|EBU|S240| Next_Colorspace|Previous_Colospace sclr[A]
IFHV op n.n sclr	Input Horizontal/Vertical Filter: op[H|V] n.n[0.0 – 8.0] sclr[A]
IFMD n sclr	Input Filter Mode: n[0|1] OFF|ON sclr[A]
IHAC nnnn sclr	Input Horizontal Active: n[Pixels] sclr[A]
IHFP nn sclr	Input Horizontal Front Porch: n[Pixels] sclr[A]
IHTT nnnn sclr	Input Horizontal Total: n[Pixels] sclr[A]
IINFO sclr?	Input Timing (H,V,Vtot,Int) sclr[A]
IOS n.nn sclr	Input Oversample: n[0.5-2.00] sclr[A]
IPED nnn sclr	Input Pedestal: n[-500 - 500] sclr[A]
IRSP op nnn sclr	Input Raster Size/Position: op[L|R|T|B|Y|Z] n[-999 – 999] sclr[A]
ISAT nnn sclr	Input Saturation: n[50-200]% sclr[A]
ISYNC n	Input Sync: n[0-3], SOG|CSYN|H&V|AUTO
ITMG fffff tttt n sclr	Input Timing: f[Hor Frq], t[Ver Tot], I[Inter], sclr[A]
IVAC nnnn sclr	Input Vertical Active: n=[lines] sclr[A]
IVFP nn sclr	Input Vertical Front Porch: n[lines] sclr[A]
IVLV nnn sclr	Input Video Level: n[0-3000] sclr[A]
LCK? op sclr	Video Lock: op[I|O] Input|Output
MBRT nnn	Analog Mixer Brightness: n[100 - 125]
MCNT nnn	Analog Mixer Contrast n[0 – 125]
MPL	Factory Use Only
MSTAT	Factory Use Only
OAR n.nnn	Output Aspect Ratio: n[0-2.000]
OBRT op nnn o	Output Brightness: op[C|R|G|B] c[75 - 125]% RGB[-25 - 25]% o [1]
OCDEL nn	Output Configuration Delete: n[CNF Index]
OCNT op nnn o	Output Contrast op[C|R|G|B] c[75 - 125]% RGB[-25 - 25]% o [1]
OCREC nn	Output Configuration Recall: n[CNF Index]

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OCRECF nn	Output Configuration Factory Recall: n[CNF Index]
OCSAV nn ssssssss	Output Configuration Save: n[CNF Index] s[Name]
OGAMC n.nn o	Output Gamma Correction: n[0.50-3.00] o [1]
OHAC nnnn	Output Horizontal Active: n[Pixels]
OHFP nn	Output Horizontal Front Porch: n[Pixels]
OHFQ nnnnn	Output Horizontal Frequency: n[Hz]
OHSY nn	Output Horizontal Sync: n[Pixels]
OHTT nnnn	Output Horizontal Total: n[Pixels]
OINT n	Output Interlaced: n[0|1], NON_INT|INTERLACED
OMOD m opn	Output Mode Configuration: m[0|1], B|B/A (Preview)
OPED n	Output Pedestal: n[0-500]
ORSP op nnn	Output Raster Size/Position: op[HV] n[-999 – 999]
OSEQ n	Output Serr & Eq: n[0-3], None,Eq,Serr,Both
OSYNC n	Output Sync.: n[0-6], GR|-C|+H+V|+H-V|-H+V|-H-V|3LEV
OTPM m typ inv bx gr	Output Test Pattern: M[0-2] OFF|ON|AUTO typ[0-9] inv[0|1] bx[0|1] gr[0|1]
OVAC nnnn	Output Vertical Active: n[Lines]
OVFP nn	Output Vertical Front Porch: n[Lines]
OVFQ nnnnn	Output Vertical Frequency: nnnnn[Hz]
OVLV nnn	Output Video Level [445-3000]
OVSY nn	Output Vertical Sync: n[lines]
OVTT nnnn	Output Vertical Total: n[Lines]
OWHS	This command is obsolete. Use WIN command.
OWHV	This command is obsolete. Use WIN command.
OWVS	This command is obsolete. Use WIN command.
OWWD	This command is obsolete. Use WIN command.
OWWN	This command is obsolete. Use WIN command.
PC	Print Correction Values
RESET	Reset - Factory Defaults
SRC op sclr?	Check Video Source: op[I|O] Input|Output sclr[A]
STAT	Factory Use Only
TPL	Factory Use Only
UL op nn s[8]	Upload CFG: op[I|O] (I) nn[0-16] (O)[0-96] s[Name]
VER?	Version Information
VRBOS n	Verbose Mode: n[0|1], OFF|ON
WAI sclr	Who Am I: sclr[A]
WEL op ew	Wipe Edge Load: op[L|S|U|D|W] linear|sine|upload|download|width, ew[1 256]
WIN ss hc vc hs vs rr mode hex vex hsx vsx modex	Window Command – See WHATSNEW.TXT for complete description
WMRND sclr lm	Random Window Move: sclr[A], lm[L] loop
WMTDL sclr	Window Move Table Download: sclr[A]
WMTUL sclr	Window Move Table Upload: sclr[A]
WMTX sclr	Window Move Table Execute: sclr[A]
ZM ss op zm hpan vpan	Zoom Command: ss[A], op[M|I|D] zm, hpan, vpan[0-1000.0]

Additional Notes for Application Programmers

The VFC-2100DE is designed to accept commands from the front panel and/or RS-232 port to control video processing functions. When controlling the unit remotely via the RS-232 link, the front panel controls are still fully operational. At any given time, commands should be entered only from a single source (front panel or RS-232). This will prevent confusion/ possible configuration errors that might occur due to receipt of conflicting commands from different sources.

The front panel interface allows the user to select configuration options from pre-defined menus. The commands received from the front panel are entered in a predictable sequence. This allows each entry to be checked to prevent incompatible combinations of controls (i.e., selecting Beta output format in VGA output mode) from being selected. In contrast, commands from the RS-232 link are designed to be entered in any sequence. Only a limited amount of internal testing is conducted to verify that incompatible combinations are not selected. One way to efficiently develop command sequences to control the VFC-2100DE functions remotely is to first enter the equivalent commands to configure the unit via the front panel. Once configuration parameters are established, then an equivalent sequence of commands can be entered as an application program.

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VFC-2100DE Commands Description

Command:

AOIHC op hhhh sclr

Description:

Adjusts the horizontal center of the display (area of interest)
This is an obsolete command. Use ZM command.

Command:

AOIHV op hhhh vvvv sclr

Description:

Adjusts the display's horizontal and vertical center
This is an obsolete command. Use ZM command.

Command:

AOIVC op vvvv sclr

Description:

Adjusts the display's vertical center
This is an obsolete command. Use ZM command.

Command:

AOIWD op wwww sclr

Description:

Adjusts the display's width (zoom in/zoom out)
This is an obsolete command. Use ZM command.

Command:

AOIWN op wwww hhhh vvvv sclr

Description:

Adjusts the display's width, horizontal center, and vertical center
This is an obsolete command. Use ZM command.

Command:

CHR c

Description:

Echoes back the character inputted in upper case format

Parameters:

c - ASCII Char to be echoed back in upper case format.

Example:

CHR k : returns the upper case character K

Command:

CMDST?

Description:

Checks the status of the last command executed. Returns 0=completed, no errors.
Returns 1 (or more)=indicates last error condition.

Parameters:

None

Command:

CRP sclr op lt rt tp bt

Description:

This will define the cropping window of the output.

Parameters:

sclr – Select Scaler; [A|B] Scaler A or B (ignored if the 2nd scaler is not installed)
op – Mode [M|I|D] Manually set, Increment, Debug
lt – Left edge, [0 – 100]%
rt – Right edge, [0 - 100]%
tp – Top edge, [0 – 100]%
bt – Bottom edge, [0 – 100]%

Example:

CRP A M 10 10 10 10: This will crop the window by 10% on the right, left, top and bottom.

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Command:

DEBUG?

Description:

Checks if Debug mode is enabled or disabled Returns 0=disabled or 1=enabled.

Parameters:

None

Command:

DFRMT?

Description:

Checks for the Data format

Parameters:

None

Command:

DL op nn sclr

Description:

Download User CFG Command – I/O Library to RS232 (Referenced from PC side)

Parameters:

op - Select Global Settings, Input or Output Library; op[G|I|O]
nn - Index position in library, 0 to IN_USERLIB_SIZE [96] or OUT_USERLIB_SIZE[16]
sclr - Select Scaler; [A]

Example:

(Assuming that there is a saved Input Configuration in Index #1 from Scaler A. Make sure the Data Terminal is using RAW ASCII format)
Type in the following command and do not press the “Enter” key:
DL I 1 A
Go to the RETRIEVE FILE.option
Provide the file with an appropriate filename and click OK. The configuration has now been downloaded.
Note : Refer to the command UL if you want to upload a configuration.

Command:

ECHO n

Description:

Enables or disables echo mode (when typing in these RS-232 commands)

Parameters:

n - Echo Enable/Disable; n[0|1], OFF|ON

Examples:

ECHO 1 : enables echo mode
ECHO 0 : disables echo mode
EFLDL :
EFLUL :in help

Command:

EFT s e w u x

Description:

Allows user to define edge feather region on left or right side of output.

Parameters:

s – side[L|R] left, right
e – mode [0|1] disable, enable
w – width of blend region in pixels [1 - 256]
u – user mode [0|1] command generated table|use upload table
x – exponent of the curve [0.1 – 3.0]

Example:

EFT L 1 64 0 2: Feathers left edge with 64 pixels wide and exponent of 2
EFT L 0: Turns feathering off on left edge
EFTL :
FLDEX :in help

Command:

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FPLCK?

Description:

Checks if the Front Panel is locked/unlocked (0=unlocked, 1=locked)

Parameters:

None

Command:

FREEZ n sclr

Description:

Enable/Disable Freeze

Parameters:

n - Freeze Enable/Disable; n[0|1], OFF|ON
sclr - Select Scaler; [A]

Examples:

FREEZ 1 A : enables freeze on the display on Scaler A
FREEZ 0 A : disables freeze on the display on Scaler A
FSM : in help & commands

Command:

GLENA n

Description:

Enable/Disable Genlock

Parameters:

n - Genlock Enable/Disable; n[0|1], OFF|ON

Example:

GLENA 1 : enables Genlock

Command:

GLHPH nnn

Description:

Adjusts the value of Genlock H Phase

Parameters:

n.n - Genlock H Phase [0-63]

Example:

GLHPH 20 : adjusts the value of Genlock H Phase to 20μs.

Command:

HELP i

Description:

Displays the RS-232 commands along with their format and description on the terminal port.

Parameters:

i - Index value [a-z,A-Z] Jumps to given index

Examples:

HELP : displays all of the RS-232 commands
HELP I: displays all RS-232 commands from I to Z

Command:

IAR n.nnn sclr

Description:

Adjusts the Input Aspect Ratio value

Parameters:

n.nnn- Aspect Ratio; n[0-5.000]
sclr - Select Scaler; [A]

Example:

IAR 1.245 A : adjusts the Aspect Ratio on Scaler A to be 1.245

Command:

IARB n sclr

Description:

Enables or disables the Input Aspect Ratio Box

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Parameters:

n - Aspect Ratio Box; n[0|1|2]; OFF|AUTO|FULL
sclr - Select Scaler; [A

Example:

IARB 1 A : enables the Input Aspect Ratio Box based on the aspect ratio on Scaler A

Command:

IARR op n.nnn sclr

Description:

Input Aspect Ratio Relative

Parameters:

op - Select increment/Decrement Adjustment;[I|D]
n.nnn - Adjustment value [0-5.0]
sclr - Select Scaler; [A]

Example:

IARR I 1.3 A: increments Aspect Ratio Relative value by 1.3 on scaler A

Command:

IBRT op nnn sclr

Description:

Adjusts the Input Brightness value

Parameters:

op - Select Brightness Control; [C|R|G|B|I|D] Common, Red,Green,Blue Offset, Increase, Decrease
nnn - Brightness value; C Range 75 - 125%, RGB Range -25 - 25%
sclr - Select Scaler; [A]

Example:

IBRT C 110 A : adjusts the Input Brightness on Scaler A to be 110%
IBRT I 50 A : increments Input Brightness value on Scaler A by 50%

Command:

ICDEL nn

Description:

Deletes a specified Input Configuration.

Parameters:

nn - Input Configuration Index; n[CNF Index] (Total index available: 96)

Command:

ICGTE n sclr

Description:

Adjusts the Input Clamp Gate mode

Parameters:

n - Clamp Gate Selection; SYNC|PRCH|PDLY; 0|1|2
sclr - Select Scaler; [A]

Examples:

ICGTE 0 A : adjusts the Input Clamp Gate on Scaler A to be SYNC
ICGTE 1 A : adjusts the Input Clamp Gate on Scaler A to be PRCH
ICGTE 2 A : adjusts the Input Clamp Gate on Scaler A to be PDLY

Command:

ICNT op nnn sclr

Description:

Adjusts the Input Contrast values

Parameters:

op - Select Contrast Control; [C|R|G|B|I|D]; Common|Red|Green|Blue|Increase|Decrease
nnn - Contrast value, C Range 75 - 125%, RGB Range -25 - 25%
sclr - Select Scaler, [A]

Example:

ICNT C 100 A : adjusts the Common Input Contrast value as 100% on scaler
ICNT D 25 B : decrements the Common Input Contrast value on scaler B by 25%

Command:

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ICREC nn sclr

Description:

Recalls a stored Input Configuration.

Parameters:

nn - Input Configuration Index; n[CNF Index] (Total index avail : 96)
sclr - Select Scaler; [A]

Example:

(Assuming there is a saved Input Configuration in Index #1)
ICREC 1 A : loads the Input Configuration stored on Index #1 for Scaler A

Command:

ICSAV nn s[8] sclr

Description:

Saves an Input Configuration to a specified index

Parameters:

nn - Input Configuration Index; n[CNF Index] (Total index avail : 96)
s[8] - Input Configuration Name; s[Name]
sclr - Select Scaler; [A]

Example:

ICSAV 1 TEST A : saves the input configuration currently on Scaler A to Index #1 with the label name TEST

Command:

ICSP n sclr

Description:

Selects an Input Colorspace

Parameters:

n - Input Colorspace; n[0-5,254,255], RGB|B50|B60|MII|EBU|S240|Next Colorspace| Previous Colorspace
sclr - Select Scaler; [A]

Examples:

ICSP 0 A : selects the RGB Colorspace for Scaler A
ICSP 1 A : selects the B50 Colorspace for Scaler A
ICSP 254 B : selects the next Colorspace on the list

Command:

IFHV op n.n sclr

Description:

Adjusts the Input's Horizontal/Vertical Filter values

Parameters:

op - [H|V]; Horizontal or Vertical filter.
n.n - Filter value; n[0.0 - 8.0]
sclr - Select Scaler; [A]

Example:

IFHV H 1.3 A : adjust the Horizontal filter value to be 1.3 on Scaler A

Command:

IFMD n sclr

Description:

Enables or disables the Special Input Filter

Parameters:

n - Special Filter Enable; n[0|1], OFF|ON
sclr - Select Scaler; [A]

Examples:

IFMD 1 A : enables the filter for Scaler A
IFMD 0 A : disables the filter for Scaler A

Command:

IHAC nnnn sclr

Description:

Adjusts the Input Horizontal Active value

Parameters:

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nnnn- Input Horizontal Active: n[Pixels]
sclr - Select Scaler; [A]

Example:

IHAC 1024 A : adjusts the Input Horizontal Active value to 1024 on Scaler A

Command:

IHFP nn sclr

Description:

Adjusts the Input Front Porch value

Parameters:

nn - Input Horizontal Front Porch: n[Pixels]
sclr - Select Scaler; [A]

Example:

IHFP 10 A : adjusts the Input Front Porch value to 10 on Scaler A

Command:

IHTT nnnn sclr

Description:

Adjusts the Input Horizontal Total value

Parameters:

nnnn - Input Horizontal Total: n[Pixels]
sclr - Select Scaler; [A]

Example:

IHTT 1000 A : adjusts the Input Horizontal Total value to 1000 on Scaler A

Command:

IINFO sclr?

Description:

A query done on the Input Timing values

Parameters:

sclr - Select Scaler; [A]

Example:

IINFO A?
= 78.2, 72, 1005, 0

Command:

IOS n.nn sclr

Description:

Adjusts the Input Oversample value

Parameters:

n.nn - Oversample: n[0.5-2.00]
sclr - Select Scaler; [A]

Example:

IOS 1.00 A : adjusts the Input Oversample value as 1.00 on Scaler A

Command:

IPED nnn sclr

Description:

Adjusts the Input Pedestal Level

Parameters:

nnn - Setup Level; n[-500 - 500]
sclr - Select Scaler; [A]

Example:

IPED 300 A : adjusts the Input Pedestal value as 300 on Scaler A

Command:

IRSP op nnn sclr yyy

Description:

Adjusts the Input Raster Size/Position

Parameters:

op - Select Raster Control; [L|R|T|B|Y|Z] Left,Right,Top,Bottom,Top/Left,Bottom/Right

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nnn - Increment/Decrement value; -999 - 999
sclr - Select Scaler; [A]
yyy – Y offset value: -999 – 999 (used for control mode Y and Z only)

Example:

IRSP R 100 A : increments the Right Input Raster Size/Position by 100 on Scaler A
IRSP Y -100 A : decrements the Top/Left Input Raster Size/Position by 100 on Scaler A

Command:

ISAT nnn sclr

Description:

Adjusts the Input Color Balance Saturation (only applicable if input is NOT RGB)

Parameters:

nnn - Input Saturation: n[50-200]%
sclr - Select Scaler; [A]

Example:

ISAT 110.0 A : adjusts the Input Color Balance to 110.0%

Command:

ISYNC n

Description:

Selects the input sync

Parameters:

n - Input Sync: n[0-3], SOG|CSYN|H&V|AUTO
sclr - Select Scaler; [A]

Example:

ISYNC 2: selects H&V for input sync.

Command:

ITMG fffff tttt n sclr

Description:

Adjusts the Input Timing

Parameters:

fffff - Input horizontal frequency
tttt - Vertical Total
i - Interlaced [0|1] Disable|Enable
sclr - Select Scaler; [A]

Example:

ITMG 33972 2262 1 A: adjusts the Input Timing value with the horizontal frequency of 33972, the vertical total of 2262 and interlaced on Scaler A

Command:

IVAC nnnn sclr

Description:

Adjusts the Input Vertical Active value

Parameters:

nnnn - Input Vertical Active: n[Lines]
sclr - Select Scaler; [A]

Example:

IVAC 1024 A : adjusts the Input Vertical Active value to 1024

Command:

IVFP nn sclr

Description:

Adjusts the Input Vertical Front Porch value

Parameters:

nn - Input Vertical Front Porch: n[Lines]
sclr - Select Scaler; [A]

Example:

IVFP 10 A : adjusts the Input Vertical Front Porch value as 10

Command:

IVLV nnn sclr

Description:

Adjusts the Input Video Level

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Parameters:

nnn - Input Video Level; n[445-3000]
sclr - Select Scaler; [A]

Example:

IVLV 500 A : adjusts the Input Video Level as 500 on Scaler A

Command:

LCK? op sclr

Description:

Video Lock Command

Parameters:

op - Select Video IO; [I|O] Input,Output
sclr - Select Scaler; [A]

Command:

MBRT nnn

Description:

Adjusts the Analog Mixer Brightness

Parameters:

nnn - Brightness value; n[100-125]

Example:

MBRT 120 : adjusts the analog mixer brightness value as 120

Command:

MCNT nnn

Description:

Adjusts the Analog Mixer Contrast

Parameters:

nnn - Contrast value; n[0-125]

Example:

MBRT 60 adjusts the analog mixer contrast value as 60

Command:

OAR n.nnn

Description:

Adjusts the Output Aspect Ratio value

Parameters:

n.nnn - Aspect Ratio; n[0-2.000]

Example:

OAR 1.500 adjusts the Output Aspect Ration value as 1.500

Command:

OBRT op nnn o

Description:

Adjusts the Output Brightness value

Parameters:

op - Select Brightness Control; [C|R|G|B] Common,Red,Green,Blue Offset
nnn - Brightness value; C Range 75 - 125%, RGB Range -25 - 25%
o - Output [1]

Example:

OBRT C 99 adjusts the Common Output Brightness value as 99% for output 1
OBRT R 25 1: adjusts the red output brightness value to 25% for output 1

Command:

OCDEL nn

Description:

Deletes a stored Output Configuration

Parameters:

nn - Output Configuration Index; n[CNF Index] (Total index avail : 96)

Example:

(Assuming there is a saved Output Configuration in Index location#1)
OCDEL 1 : deletes the saved Output Configuration in location #1

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Command:

OCNT op nnn o

Description:

Adjusts the Output Contrast value

Parameters:

op - Select Contrast Control; [C|R|G|B]; Common|Red|Green|Blue
nnn - Contrast value, C Range 75 - 125%, RGB Range -25 - 25%
o – Output [1]

Example:

OCNT C 100 : adjusts the Common Output Contrast value to 100%

Command:

OCREC nn

Description:

Recalls a stored Output Configuration

Parameters:

nn - Output Configuration Index; n[CNF Index] (Total index avail : 96)

Example:

(Assuming there is a saved Output Configuration in Index #1)
OCREC 1 recalls the Output Configuration stored in Index #1

Command:

OCRECF nn

Description:

Recalls a Factory Installed Output Configuration

Parameters:

nn - Output Configuration Index; n[CNF Index] (Total index availabl: 20)

Command:

OCSAV nn ssssssss

Description:

Saves an Output Configuration

Parameters:

nn - Output Configuration Index; n[CNF Index] (Total index avail : 16)
ssssssss - Output Configuration Name; s[Name]

Example:

OCSAV 1 TEST saves the output setting currently used into Index #1 with a label name of TEST

Command:

OGAMC n.nn o

Description:

Adjusts the Output Gamma value

Parameters:

n.nn - Output Gamma Correction; n[0.40-3.40]
o – output; [1]

Example:

OGAMC 2.50 1 adjusts the Output Gamma value to 2.50

Command:

OHAC nnnn

Description:

Adjusts the Output Horizontal Active value

Parameters:

nnnn - Output Horizontal Active: n[Pixels]

Example:

OHAC 1024 adjusts the Output Horizontal Active value to be 1024

Command:

OHFP nn

Description:

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Adjusts the Output Horizontal Front Porch value

Parameters:

nn - Output Horizontal Front Porch: n[Pixels]

Example:

OHFP 60 adjusts the Output Horizontal Front Porch value as 60

Command:

OHFQ nnnnn

Description:

Adjusts the Output Frequency value

Parameters:

nnnn - Output Horizontal Frequency: n[Hz]

Example:

OHFQ 48780 adjusts the Output Horizontal Frequency to be 48,780 Hz

Command:

OHSY nn

Description:

Adjusts the Output Horizontal Sync value

Parameters:

nn - Output Horizontal SYNC: n[Pixels]

Example:

OHSY 96 adjusts the Output Horizontal Sync value to be 96

Command:

OHTT nnnn

Description:

Adjusts the Output Horizontal Total value

Parameters:

nnnn - Output Horizontal Total: n[Pixels]

Example:

OHTT 1300 adjusts the Output Horizontal Total value as 1300

Command:

OINT n

Description:

Enables or disables the Output Interlaced mode

Parameters:

n - Interlace Mode: n[0|1], NON-INTERLACED|INTERLACED

Example:

OINT 1 enables the Output Interlaced mode

Command:

OPED n

Description:

Adjusts the Output Pedestal level

Parameters:

n - Output Pedestal; n[0-500]

Example:

OPED 10 : adjusts the Output Pedestal value as 10.

Command:

ORSP op nnn

Description:

Adjusts the Output Raster Size/Position

Parameters:

op - Select Raster Control; [H|V] Horizontal, Vertical.
nnn - Increment/Decrement value; -999 - 999

Example:

ORSP H 100 increment the Horizontal Raster Size/Position by 100

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Command:

OSEQ n

Description:

Adjusts the Output Serr and Eq

Parameters:

n - Output Serr and Eq: n[0-3]; None, Eq, Serr, Serr/Eq

Example:

OSEQ 3 : adjusts the Output Serr and Eq to have both (Serr and Eq.)

Command:

OSYNC n

Description:

Adjusts the Output Sync

Parameters:

n - Output Sync: n[0-6], GR|-C|+H+V|+H-V|-H+V|-H-V|3LEV

Example:

OSYNC 3 adjusts the Output Sync value to be +H+V

Command:

OTPM m typ inv bx gr

Description:

Enables/disables the Output Test Pattern and select Test Pattern options

Parameters:

m - Output TP Enable: m[0-2] OFF|ON|AUTO
typ - Test Pattern Type: typ[1-10]
inv - Test Pattern Inversion: inv[0|1] OFF|ON
bx - Test Pattern Raster Box: bx[0|1] OFF|ON
gr - Test Pattern Grid: gr[0|1] OFF|ON

Example:

OTPM 1 2 0 0 1: enables the Test Pattern to be shown on the screen. Test Pattern type 2 has been selected with no inversion, no raster box, and with a grid.

Command:

OVAC nnnn

Description:

Adjusts the Output Vertical Active value

Parameters:

nnnn - Output Vertical Active: n[Lines]

Example:

OVAC 768 adjusts the Output Vertical Active value as 768

Command:

OVFP nn

Description:

Adjusts the Output Vertical Front Porch value

Parameters:

nn - Output Vertical Front Porch: n[Lines]

Example:

OVFP 3 adjusts the Output Vertical Front Porch value as 3

Command:

OVFQ nnnnn

Description:

Adjusts the Output Frequency value

Parameters:

nnnn - Output Vertical Frequency: n[Hz]

Example:

OVFQ 23780 adjusts the Output Vertical Frequency to be 23,780 Hz

Command:

OVLV nnn

Description:

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Adjusts the Output Video Level

Parameters:

nnn - Output Video Level: n[445-3000]

Example:

OVLV 700 adjusts the Output Video Level as 700

Command:

OVSY nn

Description:

Adjusts the Output Vertical Sync value

Parameters:

nn - Output Vertical Sync: n[Lines]

Example:

OVSY 3 adjusts the Output Vertical Sync value as 3

Command:

OVTT nnnn

Description:

Adjusts the Output Vertical Total value

Parameters:

nnnn - Output Vertical Total: n[Lines]

Example:

OVTT 813 adjusts the Output Vertical Total as 813

Command:

OWHS op hhhh sclr

Description:

Adjusts the OW Horizontal Start values
This command is obsolete. Use WIN command.

Command:

OWHV op hhhh vvvv sclr

Description:

Adjusts the OW Horizontal & Vertical Centers
This command is obsolete. Use WIN command.

Command:

OWVS op vvv sclr

Description:

Adjusts the OW Output Vertical Start
This command is obsolete. Use WIN command.

Command:

OWWD op wwww sclr

Description:

Adjusts the OW Width
This command is obsolete. Use WIN command.

Command:

OWWN wwww hhhh vvvv sclr

Description:

Adjusts the OW Width Horizontal & Vertical Centers
This command is obsolete. Use WIN command

Command:

PC

Description:

Print Correction Values

Parameters:

None

Command:

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RESET

Description:

Resets the system to factory defaults

Parameters:

None

Command:

SRC op sclr ?

Description:

Checks for the Video Source

Parameters:

op - Select Video IO; [I|O] Input,Output
sclr - Select Scaler; [A]

Example:

SRC ? O : checks for the Video Source for the Output

Command:

UL op nn s[8]

Description:

Upload CFG

Parameters:

op - Select Input or Output Library; op[I|O]
nn - Index position in library, 0 to USERLIB_SIZE, if 0 original index in file is used if input, nn[0-16]; if output, nn[0-96]
s[8] - Cfg name upto 8 characters. (Optional Parameter)

Example:

(Assuming that there is a saved Input Configuration file that you want to upload the configuration onto the VFC 2200 in Index #10. Make sure the Data Terminal is using RAW ASCII format)
Type in the following command and do not press the “Enter” key:
UL I 10 A
Go to the SEND FILE.option
Select the file containing the configuration and click OK. The configuration has now been uploaded to Index #10 in the VFC 2200.
Note : Refer to the command DL if you want to download a configuration from the VFC.

Command:

VER?

Description:

This is a version query. The return format is **sss.rr.o-m** where:
sss is the software version
rr is the version of the rbf set
o is the type of options installed
m is the 2100/2200 model. (1 is 2200)

Parameters:

None

Command:

VRBOS n

Description:

Provides descriptive error and syntax messages for command line operation.

Parameters:

n - Verbose Mode Enable/Disable; n[0|1], OFF|ON

Example:

Verbose 1 enables Verbose Mode

Command:

WAI sclr

Description:

Returns Current format number and name "Ex. 1-SMTE240"

Parameters:

sclr - Select Scaler; [A|B] Scaler A or B (ignored if the 2nd scaler is not installed)

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Command:

WEL op ew

Description:

This will upload, download or generates the wipe edge table.

Parameters:

op - Wipe Edge Load; op[L|S|U|D|W] linear|sine|upload|download|width
ew – Edge width; [1-256]

Example:

WEL S: load a sine wave curved wipe edge
WEL W 30: set the wipe edge width to 30 pixels

Command:

WIN ss hs vs hc vc rr mode hsx vsx hcx vcx modex

Description:

This will define Output Window Size and Position characteristics

Parameters:

ss - Select Scaler; [A|B] Scaler A or B (ignored if the 2nd scaler is not installed)
hs - Horizontal Size as % of Output Raster with respect to AR [0 - 100.0]
vs - Vertical Size as % of Output Raster with respect to AR [0 - 100.0]
hc - Horizontal Center as % of Output Raster [-100.0 - 100.0]
vc - Vertical Center as % of Output Raster [-100.0 - 100.0]
rr - Rate at which Window at current pos/size takes to get to pos/size specified using above parameters. [0 - 5.0]sec
mode = Window Mode [W|F] Window|Full
hsx, vsx, **hcx, vcx** and **modex** are optional parameters that perform the operations specified above for the other scaler with respect to the ss parameter.

Example:

WIN A 50 50 -50 -50 0 W: This will size the window to half of its original size and place the center of the image (Provided by Scaler A) in the bottom right hand corner of the screen. The change will happen instantly since rr = 0.
Win A 50 50 50 50 0 W 75 75 -50 -50 0 W: This will size Scaler A window to half of its original size and place the center of the image in top left corner of the screen. The change will happen instantly since rr = 0. With respect to Scalar A, Scalar B will now show 75% of its window located in lower right hand corner of the screen.

Command:

WMRND sclr lm

Description:

Uploads a random window move table continuously until a key is pressed if the loop mode parameter is set.

Parameters:

sclr – Select Scaler; [A]
lm – Loop mode; [L] continue random move until key pressed

Example:

WMRND A L: randomly update window move table for scaler A until key pressed

Command:

WMTDL sclr

Description:

This will download the window move table from the VFC. The data output is binary and of the format:

Start of Header:	0x1
Number of steps:	4 bytes

Followed by the position data for each step (repeated number of steps times):

Horizontal Width:	4 bytes (pixels)
Horizontal Start:	4 bytes (pixels)
Vertical Height:	4 bytes (lines)
Vertical Start:	4 bytes (lines)

Parameters:

sclr – Select Scaler; [A]

Example:

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WMTDL A: downloads (sends out) number of steps and position data for each step on scaler A.

Command:

WMTUL sclr

Description:

This will upload the window move table to the VFC. The data input is binary and of the format:
Start of Header: 0x1
Number of steps: 4 bytes
Followed by the position data for each step (repeated number of steps times):
Horizontal Width: 4 bytes (pixels)
Horizontal Start: 4 bytes (pixels)
Vertical Height: 4 bytes (lines)
Vertical Start: 4 bytes (lines)

Parameters:

sclr – Select Scaler; [A]

Example:

WMTUL A: Uploads window move table to the VFC for scaler A.

Command:

WMTX sclr

Description:

This will execute a window move using the window move table for the selected scaler.

Parameters:

sclr – Select Scaler; [A]

Example:

WMTX A: Executes the window moves in the window move table for scaler A.

Command:

ZM ss op zm hpan vpan

Description:

This will define zoom and pan on the input image.

Parameters:

sclr – Select Scaler; [A]
op – Mode [M|I|D] Manually set, Increment, Debug
zm – Zoom percentage; [0-1000.0]%
hpan – Horizontal pan percentage; [0-1000.0]%
vpan – Vertical pan percentage; [0-1000.0]%

Example:

ZM A M 200 50 50: This will zoom input image 200% and pans to show lower right corner as its center.

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CHAPTER SIX
Folsom Research Information

What you will find in this chapter…

- *Warranty*
- *RMA Information*
- *Technical Support/General Contact Information*

VFC-2100DE
SCALER WITH DIGITAL EFFECTS

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Folsom Research Information

Folsom Research Warranty

All video products are designed and tested to the highest quality standards and are backed by a full 3-year parts and labor warranty. Warranties are effective upon delivery date to customer. Warranty related repairs include parts and labor, but do not include faults resulting from user negligence, special modifications, lightning strikes, abuse (drop/crush), and/or other unusual damages.

The customer shall pay shipping charges when unit is returned for repair. Folsom Research will cover shipping charges for return shipments to customers.

Return Material Authorization (RMA)

In the unlikely event that a product is required to return for repair, please call 888-414-7226 and ask for a Sales Engineer to receive a Return Merchandise Authorization number (RMA).

RMA Conditions:

a) Prior to returning any item, you must receive a Return Merchandise Authorization (RMA) number.
b) All RMA numbers must appear on their return-shipping label.
c) RMA numbers are valid for ten (10) days from issue date.
d) All shipping and insurance charges on all RMA's must be prepaid by the customer

Folsom Research Contact Information

Sales Contact Information
Direct Sales Line: 916-859-2505
Toll Free Line: 888-414-7226
E-mail: sales@folsom.com

Technical Support Information
Tech Line: 888-414-7226 (Monday – Friday, 8 - 5 pm PST)

E-mail: support@folsom.com

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APPENDIX

Technical Specifications

VFC-2100DE
SCALER WITH DIGITAL EFFECTS

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Technical Specifications

Inputs

Video	RGB 0.5 v - 1.445 v p-p into 75 ohms Y = 1 volt p-p into 75 ohms R-Y = 934mv into 75 ohms B-Y = 934mv into 75 ohms
Sync	Composite Sync (TTL), Separate Horizontal and Vertical Sync (TTL), or Sync-on-Green
Format	2:1 Interlaced or Non-Interlaced
Horizontal Scan Frequency	Up to 95 KHz

Outputs

Video	RGB 0.7 v p-p into 75 ohms with or without Sync on Green RGB 0.7 v p-p into 75 ohms with or without Sync on Green BETA50 0.7 v p-p into 75 ohms BETA60 0.7 v p-p into 75 ohms MII 0.7 v p-p into 75 ohms EBU 0.7 v p-p into 75 ohms S240 0.7 v p-p into 75 ohms Y = 1 volt p-p into 75 ohms R-Y = 934mv into 75 ohms B-Y = 934mv into 75 ohms
Sync	Composite (TTL Active Low), Sync-on-Green or separate H&V
Format	2:1 Interlaced or Non-Interlaced
Resolution/Scan Frequency	Up to 1280 x 1024 at 60Hz

Mechanical

Dimensions

Height	3.50 in	(8.89 cm)
Width	17.12 in	(43.3 cm)
Depth	20.0 in	(20.0 cm)

Weight	Model 2100DE	22 lbs. (10 Kg)

Cooling Forced Air (maintain at least 1" of clearance on the left/right sides of the unit)

Connectors

Video In A	15 pin High Density
Video Loop A	15 pin High Density
Ext. Video Input	15 pin High Density
Output #1	15 pin High Density
Serial Control	DB-25 (Female)

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