datavideo

VSM-200

Instruction Manual

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Disclaimer of Product & Services

The information offered in this instruction manual is intended as a guide only. At all times, Datavideo Technologies will try to give correct, complete and suitable information. However, Datavideo Technologies cannot exclude that some information in this manual, from time to time, may not be correct or may be incomplete. This manual may contain typing errors, omissions or incorrect information. Datavideo Technologies always recommend that you double check the information in this document for accuracy before making any purchase decision or using the product. Datavideo Technologies is not responsible for any omissions or errors, or for any subsequent loss or damage caused by using the information contained within this manual. Further advice on the content of this manual or on the product can be obtained by contacting your local Datavideo Office or dealer.

FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
    a. When the power cord is damaged or frayed;
    b. When liquid has spilled into the unit;
    c. When the product has been exposed to rain or water;
    d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
    e. When the product has been dropped or the cabinet has been damaged;
    f. When the product exhibits a distinct change in performance, indicating a need for service.

Warranty

Standard Warranty

- Datavideo equipment are guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- The product warranty period beings on the purchase date. If the purchase date is unknown, the product warranty period begins on the thirtieth day after shipment from a Datavideo office.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered under warranty.
- Viruses and malware infections on the computer systems are not covered under warranty.
- Any errors that are caused by unauthorized third-party software installations, which are not required by our computer systems, are not covered under warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- Cables and batteries are not covered under warranty.
- Warranty only valid in the country or region of purchase.
- Your statutory rights are not affected.

Three Year Warranty

- All Datavideo products purchased after July 1st, 2017 are qualified for a free two years extension to the standard warranty, providing the product is registered with Datavideo within 30 days of purchase.
- Certain parts with limited lifetime expectancy such as LCD panels, DVD drives, Hard Drive, Solid State Drive, SD Card, USB Thumb Drive, Lighting, Camera module, PCIe Card are covered for 1 year.
- The three-year warranty must be registered on Datavideo's official website or with your local Datavideo office or one of its authorized distributors within 30 days of purchase.

Disposal
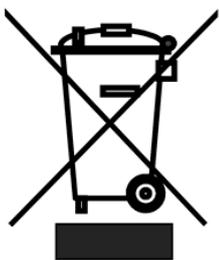
For EU Customers only - WEEE Marking

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

CE Marking is the symbol as shown on the left of this page. The letters "**CE**" are the abbreviation of French phrase "Conformité Européene" which literally means "European Conformity". The term initially used was "EC Mark" and it was officially replaced by "CE Marking" in the Directive 93/68/EEC in 1993. "CE Marking" is now used in all EU official documents.

Introduction

This newly created VSM series from Datavideo, the VSM-200 is a sophisticated system that allow users to easily ensure the stability of incoming video signals and recorded video quality from connected recorder and cameras thru two 4.3" monitors to display and monitor high quality images. By equipped with sampling vector scope- the VS-150, at the rear, it can accurately assist camera calibration, ensure precise Black/White Balance calibration, supports colour saturation, and enable luminance adjustment.

Features

Monitor

- Each monitor has a HD-SDI video input with loop-through output
- Individual adjustments of Brightness, Contrast, Color Saturation and Backlight Level for each monitor
- Front panel Headphone Jacks
- Audio indicator
- Support embedded audio on SDI & HDMI
- HD / SD-SDI and HDMI Input
- 4:3 & 16:9 display mode switching / PAL & NTSC auto switching

Sampling Vector Scope

- Rugged and compact single unit that requires only an HD-SDI or HDMI monitor
- Menu choice of Vectorscope, Histogram, Waveform and Parade displays as well as clean Video Display output (SDI to HDMI conversion)
- SDI / HD-SDI loop through – can provide clean pictures or video scope view
- Automatically detects and locks to NTSC, PAL or HD signals
- Embedded SDI audio peak meter with selectable monitoring for four stereo pairs
- Switchable 4:3 / 16:9 video thumbnail when input signal is SD-SDI
- Headphone jack audio monitoring socket with menu based volume control
- Save and Recall trace menu options for quick and easy overlay comparison of video traces
- Parade Display can be toggled between RGB and YCbCr
- Vectorscope can be toggled between 75% and 100% graticules/bars
- Waveform detail can be zoomed 20%, 40%, 60% and 100% - various parts of the waveform can then viewed by changing the X Delay value
- Capture sampling can be by Field1, Field 2 or Frame
- DC 12V operation makes the unit ideal for field or studio operation

Connections & Control

Front Panel

Monitor Area **Vector Scope Area**
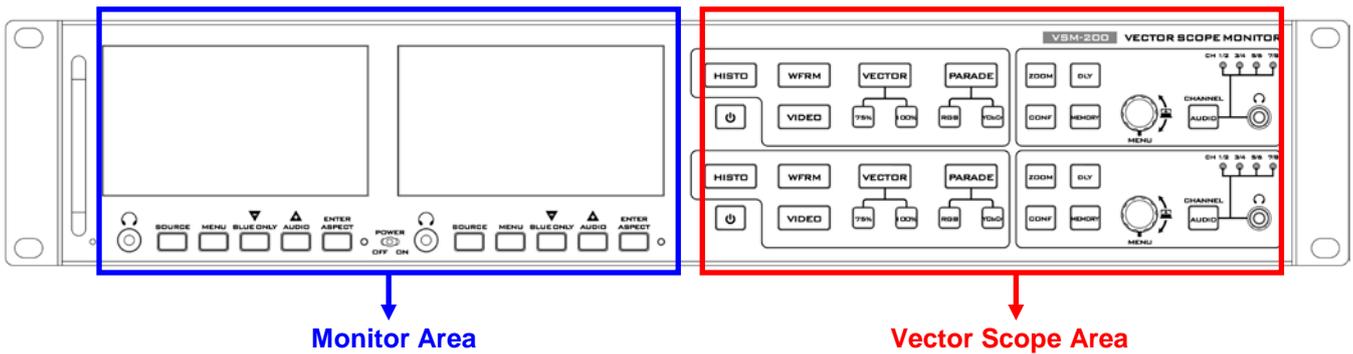
Monitor Area

Power Switch
Switches the monitor power On / Off.

Stereo mini jack plug (Monitor)
For stereo headphones. The headphone volume is controlled by the Audio Level button.
N.B. Audio source from HDMI or SDI audio embedded audio.

Source Button
Select Input source between HD-SDI / SDI and HDMI.

MENU
Calls up the on-screen adjustment menu (See **Menu Options** for more details).

UP / Audio Level (+) Button
Navigate the on-screen menu and set the functions & levels.
Allow you to control the headphones volume (+).

Down / Audio Level (–) Button
Navigate the on-screen menu and set the functions & levels.
Allow you to control the headphones volume (-).

BLUE ONLY
The BLUE ONLY button is set blue only enable, Press this button to eliminate the red and green component of input signals. Only the blue component of an input is displayed on the screen. This facilitates adjustments of chroma and phase.
(Phase adjustment is effective only for NTSC signals).

ENTER

Confirms the new settings or return to the default state.

Aspect Ratio Button
Sets the LCD aspect ratio to 16:9 or 4:3

POWER SWITCH
Switches the power On / Off.

HISTOGRAM
HISTOGRAM is used to detect the overall brightness of a location. Through VSM-200 to detect light sources from all directions reading by the camera, one can individually adjust each camera to the desired state.

WAVEFORM MONITOR
Waveform monitor is used as a reference to adjust the brightness of a camera. One can accompany grayscale chart to better distinguish the color level of the adjusting camera.

VIDEO DISPLAY
Display the SDI Input video source.
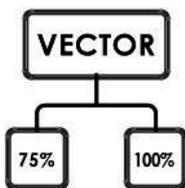
VECTOR
Applied a 75% or 100% color bar signal.
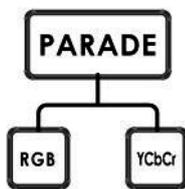
PARADE CALIBRATION
Parade calibration on RGB or YCbCr mode.
Aim the camera to take the entire test chart as a sample image. This step is necessary to make sure that the color saturation of an image reproduced from the camera is consistent and does not tint to any particular color that can cause color cast.

X ZOOM
To adjust the brightness of an area in detail, one can monitor a selected spot by choosing display graph from 20%~100%.

CONFIGURATION
576i THUMBNAIL
Set the display monitor at the lower left hand corner to 16:9 or 4:3 when the signal is 576i.

SDI LOOPTHROUGH
Set loop through on / off mode

CAPTURE
Set sampling mode FRAME: Capture the entire frame as a sample.
                        FIELD1: Capture field 1 as a sample only.
                        FIELD2: Capture field 2 as a sample only.

FIRMWARE REVISION
Display current software version

X DELA

This is used by adjusting the position of the matrix.

Set delay time from 0 ~ 17.0235uS

TRACE MEMORY

This mode allows you to save trace, recall trace or clear trace.

To recall the saved camera signals, the camera signals are consistent when camera signals (displaying in various colors) are overlapping with the one another.
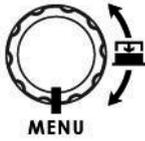
MENU

Menu dial and push to select button

Turn the knob to select the options or adjust the parameter.

Push the knob to select the options.
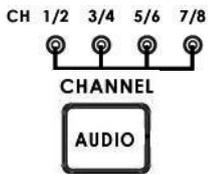
AUDIO CHANNEL

Setting & display the audio channels 1,2 / 3,4 / 5,6 or 7,8 CH.

Push the button, and then turn the MENU knob to select audio channels.

STEREO MINI JACK PLUG

3.5mm jack socket for audio monitoring

Rear Panel

Vector Scope Area   **Monitor Area**
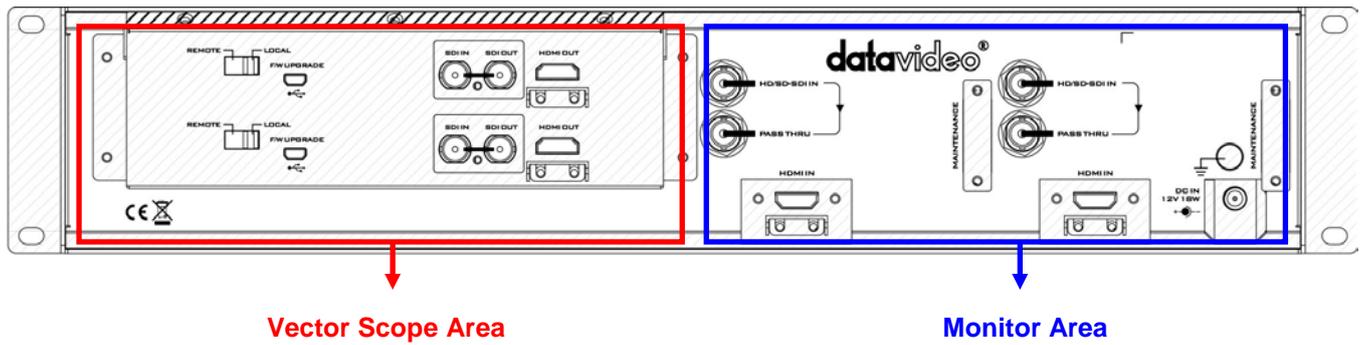
Vector Scope Area
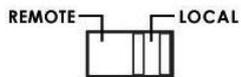
REMOTE:
Switch to REMOTE for control VSM-200 mode.

LOCAL:
For firmware update mode; if you want upgrade VSM-200 firmware please switch to LOCAL and via USB cable connect to PC for firmware update.

Mini USB
USB interface for firmware update

HD/SD-SDI INPUT
BNC connector for SDI input.

HD/SD-SDI OUTPUT
BNC connector for SDI output.

HDMI OUTPUT
HDMI digital signal output connecter.

Monitor Area

HD/SD - SDI input
BNC connector for SDI Input.

HD/SD - SDI loop through output
BNC connector for HD / SD SDI with a loop through output.
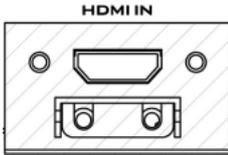
HDMI in interface
HDMI digital signal input connecter.
Support HDMI 1.1

DC in socket
Connect the supplied 12V PSU to this socket. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.
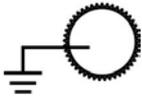
Grounding Terminal
When connecting this unit to any other component, make sure that it is properly grounded by connecting this terminal to an appropriate point. When connecting, use the socket and be sure to use wire with a cross-sectional area of at least 1.0 mm^2.

Menu Options (Monitor)

Picture

- Press the `MENU` button into the system **Picture** setting mode.
- Press `ENTER` button into the Picture setting position.
- Press `UP` / `DOWN` button moving to the **Brightness** setting.
- Press `ENTER` button into the Brightness setting position.
- Press `UP` / `DOWN` button to setting the Brightness values from 0~100
- Press `MENU` button return to the Picture setting menu.
- Press `SOURCE` button exit the setting mode.

   *N.B. To select a different setting (**Contrast, Saturation, Tint**) use the `UP` / `DOWN` buttons. Follow the same procedure to set the others values.*

   *N.B. **Brightness, Contrast and Saturation** these three modes, the value all the same as 0~100.*

Func.

- Press the `MENU` button three times into the **Func.** setting mode.
- Press `ENTER` button into the Func. setting position.
- Press `UP` / `DOWN` button moving to the **Safety Zone** setting.
- Press `ENTER` button to setting Safety Zone range (80, 90 or OFF).

- Press `UP` / `DOWN` button exit the setting mode.

   *N.B. To select a different setting (**4:3 Screen, Cinema Zone**) use the `UP` / `DOWN` buttons. Follow the same procedure to set the others status.*

**Advance**

- Press the `MENU` button five times into the **Advance** setting mode.
- Press `ENTER` button into the Advance setting position.
- Press `ENTER` button into the **Indicator** setting position.
- Press `ENTER` button to setting the Indicator ON/OFF

- Press `UP` / `DOWN` button moving to the **Reset** setting.
- Press `ENTER` button which will return all the settings of the monitor to the factory defaults.

- Press `UP` / `DOWN` button moving to the **Version** setting.
- Press `ENTER` button, the version information will display on screen.
- Press `SOURCE` button exit the setting mode.

- Press `UP` / `DOWN` button moving to the **Backlight** setting.
- Press `ENTER` button into the Backlight setting position.
- Press `UP` / `DOWN` button to setting the Backlight values from 0~100
- Press `MENU` button return to the Advance setting menu.
- Press `SOURCE` button exit the setting mode.

Setup

- Press the MENU button four times into the **Setup** setting mode.
- Press ENTER button into the Setup setting position.
- Press UP / DOWN button moving to the **OSD Timer** setting.
- Press ENTER button into the OSD Timer setting position.
- Press UP / DOWN button to select the OSD display on screen time (value from 5~60 SEC).
- Press ENTER button to setting the OSD display on screen time.

- Press UP / DOWN button moving to the **OSD Blending** setting.
- Press ENTER button into the OSD Blending setting position.
- Press UP / DOWN button to select the OSD blending display on screen (value from 0~7).
- Press ENTER button to setting the OSD blending display on screen

- Press UP / DOWN button moving to the **Color Temp** setting.
- Press ENTER button to setting the Color Temp (9300, 7500, 6500, 5400, USER).

- Press UP / DOWN button moving to the **Timer Code** setting.
- Press ENTER button to setting the Time Code ON/OFF on the screen.
- Press UP / DOWN button moving to the **TC Position** setting.
- Press ENTER button to setting the Time Code Position on the screen (Left/Up, Middle/Down, Right/Down, Right/Up)

- Press UP / DOWN button moving to the **TC Font Size** setting.
- Press ENTER button to setting the time code font size on the screen (Large or Small).

- Press MENU button return to the **Setup** setting menu.
- Press SOURCE button exit the setting mode.

VSM-200 Output Display

Video Thumbnail

Audio Indicators

Vectorscope Display

Selected Mode

Menu Area

Sample Mode

Video Format

VECTORSCOPE

NEXT MODE
VIDEO DISPLAY
▶AUDIO VOLUME

dBFS
-8
-18
-30
-40
-50
-70

1 2 3 4 5 6 7 8

BW: Low

Yl
G
R
Cy
Mg
B

75%BARS   FIELD 1   1080i 50

13
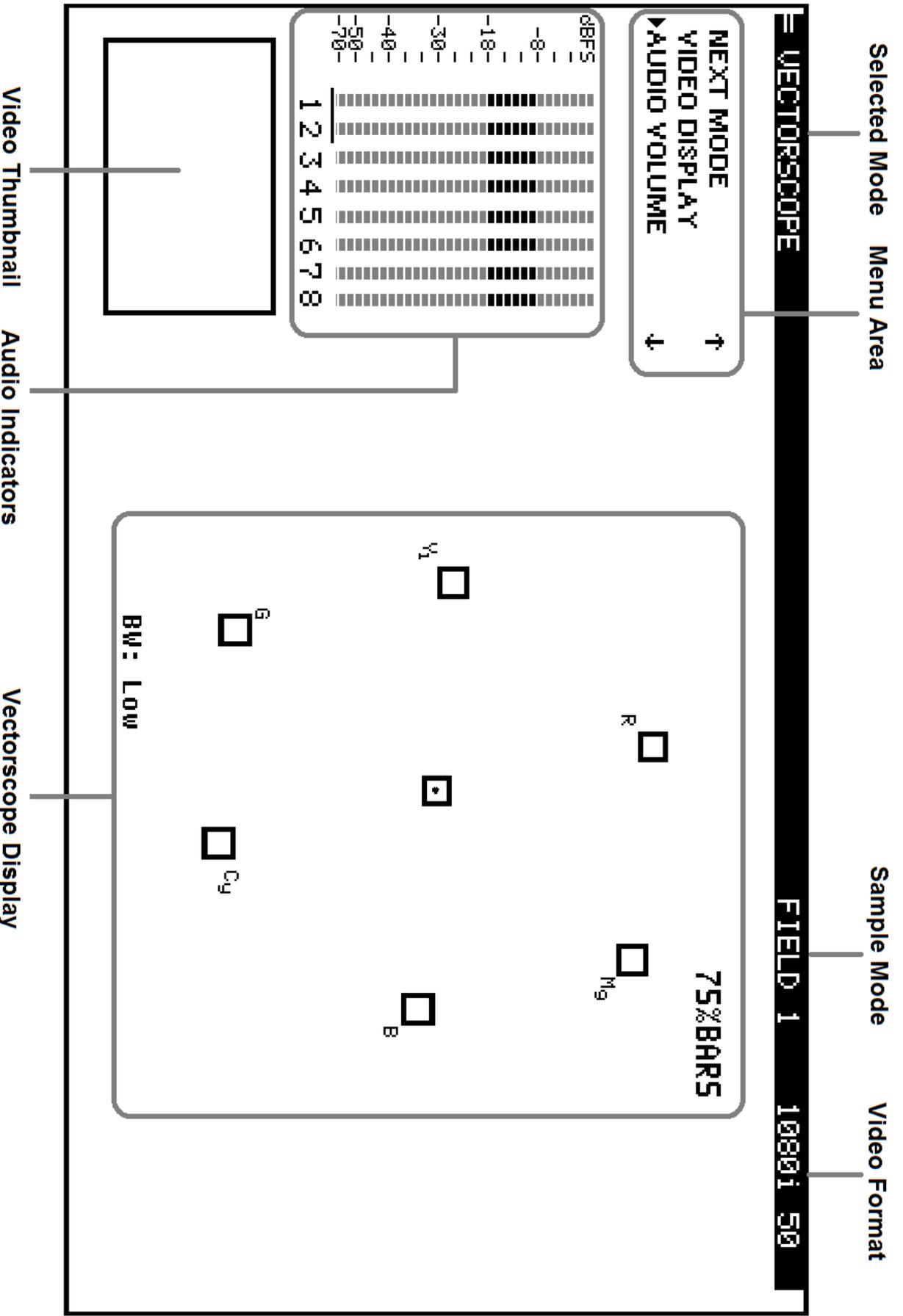
Menu Control and Options

The VSM-200 is a menu driven unit. The menu is viewed as part of the output display when it has been connected to a HDMI / SDI monitor

The menu options are scrolled by turning the Menu Dial to the left or right (See item 1 on page 8). A pointer (►) to the left of the menu options indicates which item is currently selected. To change / select a value gently press the Menu Dial in towards the VSM-200 case, like a button.

If there are more options in the current menu then an arrow up or down may be displayed to the right of the Menu Area. To go back to an earlier menu select EXIT from the current options list.

The Main Menu options are:
TOOLS
NEXT MODE
VIDEO DISPLAY
AUDIO VOLUME
AUDIO CHANNEL
CONFIGURATION

NEXT MODE
When first switched on the VSM-200 will display in the Vectorscope mode. Selecting NEXT MODE and pressing in the Menu Dial will cause the unit to display the next mode in the following order.
VECTORSCOPE
PARADE
WAVEFORM MONITOR
HISTOGRAM

NOTE: All scope views are displayed at 1280 x 720 regardless of input video format.

VIDEO DISPLAY
When this option is selected the VSM-200 will display only the incoming video. All audio and video scope views will be hidden when this option is active. This option affects both the SDI loop through and the HDMI output. To return to a scope view once more press in or rotate the Menu Dial on the VSM-200.

TOOLS

The TOOLS option is only available with certain VSM-200 output displays. These are VECTORSCOPE, PARADE and WAVEFORM MONITOR.

VECTORSCOPE related **TOOLS**: **TRACE MEMORY**
SET BANDWIDTH
SET UP BARS

PARADE related **TOOLS**: **TRACE MEMORY**
SET RGB / YCbCr

WAVEFORM related **TOOLS**: **TRACE MEMORY**
X ZOOM
X DELAY

TRACE MEMORY

This option allows the current VSM-200 scope trace to be saved, recalled or cleared within the unit's memory. A saved or recalled trace will be displayed in green sample points and the live or current signals will be displayed in white sample points. Where the saved and current traces match sample points are displayed in blue. In this way two sources can be compared or a single source can be checked to see if its output drifts during extended use.

SET BANDWIDTH (VECTORSCOPE TOOLS)

This option can be changed between LOW or FULL bandwidth. The LOW bandwidth option results in fewer sample points being displayed but still allows a good read of the incoming signals. The FULL bandwidth option results in all sample points being displayed.

SET UP BARS (VECTORSCOPE TOOLS)

This option allows the Vectorscope Graticule targets for each colour to be switched between the 75% and 100% colour bar positions. For most TV broadcast situations the Graticule targets should be set for 75% bars.

SET RGB / YCbCr (PARADE TOOLS)

This setting allows the parade displayed to be switched between RGB and component YCbCr values.

X ZOOM (WAVEFORM TOOLS)

This option allows the waveform display to be zoomed on the X Axis so a specific area can be examined in more detail. X ZOOM options are:

100% = The whole width of the waveform is displayed (normal view).

60% = Only 60% of the whole waveform is shown on the display. In this setting X DELAY can be used to scroll left and right across the waveform.
In this way the rest of the waveform can be viewed at the same level of detail.

40% = Only 40% of the whole waveform is shown on the display. In this setting X DELAY can be used to scroll left and right across the waveform. In this way the rest of the waveform can be viewed at the same level of detail.

20% = Only 20% of the whole waveform is shown on the display. In this setting X DELAY can be used to scroll left and right across the waveform. In this way the rest of the waveform can be viewed at the same level of detail.

X DELAY (WAVEFORM TOOLS)

This feature allows the waveform display to be panned right or left at the chosen level of X ZOOM detail. A low delay value relates to the left hand side of the vision raster and a high delay value relates to the right hand side of the vision raster.

AUDIO VOLUME

Audio embedded into the SDI / HD-SDI signal can be monitored by plugging headphones into the 3.5mm jack socket on the VSM-200 front panel. Using the AUDIO VOLUME option, the Menu Dial can be used to increase or reduce the volume at the connected headphones, so it is monitored at a comfortable level.

AUDIO CHANNEL

The first 8 audio channels embedded into an SDI / HD-SDI signal can be monitored by the VSM-200. Using the AUDIO CHANNEL option allows selected stereo pairs to be chosen for monitoring with the headset socket. The chosen pair is underlined on the VSM-200 output display also.

CONFIGURATION

This option in the VSM-200 Main Menu allows set up of Video Thumbnail, SDI loopthrough, Capture setting and confirmation of the VSM-200 firmware revision.

VIDEO THUMBNAIL

Allows the option to switch the video thumbnail on the scope display between 4x3 (4:3) or 16x9 (16:9) aspect ratio when working with Standard Definition inputs. A HD input should be viewed in its native 16x9 aspect ratio.

SDI LOOPTHROUGH

Allows the SDI output of the VSM-200 to be used as:

     ON = A clean video loop through – SD or HD

     OFF = A secondary scope output – HD-SDI 1280x720

     OFF is the default option at power on

NOTE: This setting can be over-ridden by the **VIDEO DISPLAY** setting in the VSM-200 main menu.

CAPTURE

The VSM-200 scope displays can be set to sample **FIELD1**, **FIELD2** or **FRAME** depending on the users requirement. This choice is confirmed in the top right hand corner of the current scope display.

DSC labs camera alignment tools

Camera alignment tools such as DSC labs' C*am Align Books* and *Chroma Du Monde* can help speed up the camera alignment process by introducing known calibrated constants into the sampled video that should produce a standard VSM-200 Waveform, Parade or Vectorscope pattern. The live lighting and camera settings can then be adjusted to produce a VSM-200 pattern that matches a calibrated pattern.

For more information on these tools visit http://www.dsclabs.com/

VSM-200 Quick Start Guide

Black and White Balance Adjustment (VECTORSCOPE)

1. Aim the camera at a solid white background or white reference card.

2. Turn on any set lights and ensure any coloured filters are removed. We want an evenly lit white reference card or background with only true white light.

3. Select VECTORSCOPE mode on the VSM-200 using the NEXT MODE option.

4. Use the camera's auto white balance feature to white balance against the solid white background or reference white card.

5. If necessary adjust R (Red) or B (Blue) GAIN of the camera to move the shown sample points for white video into the center graticule box of the VSM-200 Vectorscope.

Correctly centered samples

Incorrect points towards blue
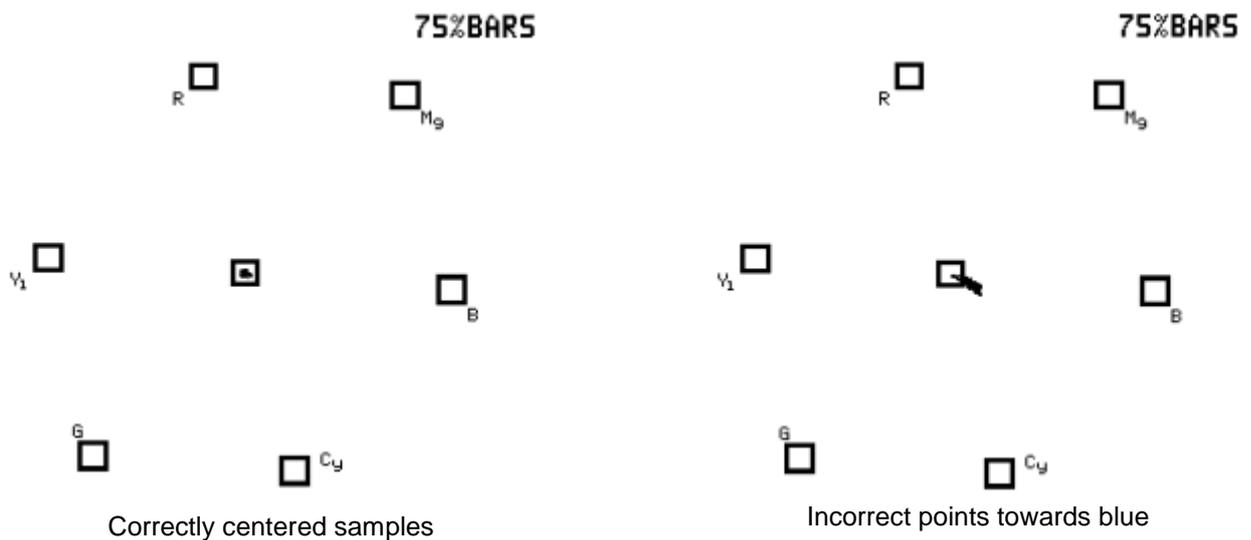
6. Once white balancing is complete cap the camera lens to produce black video. The sample points should only appear in the same center graticule box of the VSM-200 Vectorscope

7. If necessary adjust R (Red) or B (Blue) GAIN of the camera to move the shown sample points for black video into the center graticule box of the VSM-200 Vectorscope.

8. Remove the lens cap and continue to Luminance Adjustment.

Luminance Adjustment (HISTOGRAM)

1. Under the same on set lighting conditions aim the camera back to the white background or ideally a grayscale reference chart which includes 100% white and absolute black.

2. Select HISTOGRAM mode on the VSM-200 using the NEXT MODE option.

3. Adjust the camera's IRIS and Neutral Density Filter to reach the desired maximum white level state. If the camera has a Zebra function you can use this to identify areas of under or over exposure too.

4. If aiming at a precise grayscale chart, the VSM-200 histogram output may resemble evenly spaced vertical sample bars in line with the grayscale chart. However, if the pattern is distributed towards the right (100), it can mean the camera is over exposed. If the pattern is distributed towards the left (0), it can mean the camera is under exposed.

5. If there are readings below zero the black levels will be crushed or too black. Use the master pedestal setting on the camera to set the lowest black level at or slightly above 0.

6. Once the first camera is correctly calibrated select TOOLS> TRACE MEMORY> SAVE TRACE to save the calibrated matrix levels from the first camera.

7. Now connect VSM-200 to the second camera on the set. Adjust the white and black balance on the next camera as described earlier.

8. Now adjust the grayscale reading from second camera output so that it matches the saved output from first camera to align the cameras. The same procedure can be repeated for any remaining cameras.

Luminance Adjustment (WAVEFORM MONITOR)

1. Under the same on set lighting conditions aim the camera back to the white background or ideally a grayscale reference chart.

2. Select WAVEFORM mode on the VSM-200 using the NEXT MODE option.

3. Adjust the camera's IRIS and matrix to reach the desired maximum white level state. There may be a pre-selected level, such as 600mv as a standard for consistency in brightness.

4. If aiming at a precise grayscale chart, the VSM-200 waveform output may resemble an X shaped matrix. The steps in this matrix should be evenly distributed in line with the grayscale chart. However, if the matrix is not evenly distributed, it means that the Gamma is not correctly set, and will lead to further adjustment of the camera.

5. Once the first camera is correctly calibrated select TOOLS> TRACE MEMORY> SAVE TRACE to save the calibrated matrix levels from the first camera.

6. Now connect VSM-200 to the second camera on the set. Adjust the white and black balance on the next camera as described earlier.

7. Now adjust the grayscale matrix reading from second camera output so that it matches the saved matrix from first camera to align the cameras. The same procedure can be repeated for any remaining cameras.
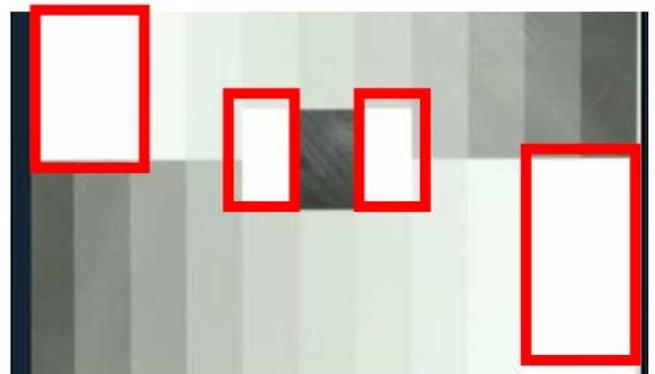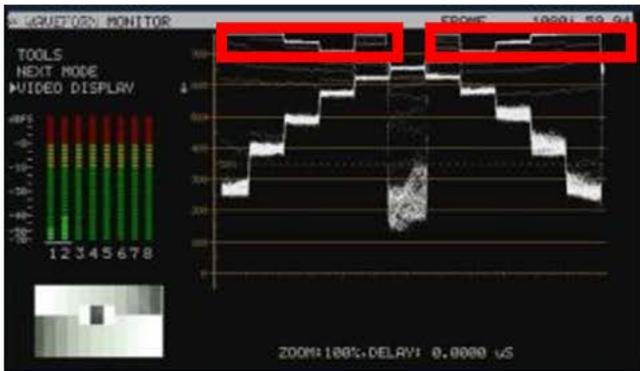
The grayscale matrix image above is not evenly stepped and shows there are four over-exposed white areas

Color /Hue Adjustment (PARADE RGB / YCbCr)

1. Under the same on set lighting conditions aim the camera at a color reference chart (such as DSC labs' Chroma Du Monde).

2. Adjust the colour level of the camera to give its image the required warmer or colder look according to your preference.

3. Select PARADE mode (RGB or YCbCr) on the VSM-200 using the NEXT MODE option.

4. PARADE displays the characteristic colour levels on a scale. If the camera is pointed at the Chroma Du Monde reference chart, the operator can now set the camera to standardized color levels such as R:650mv G:600mv B:600mv. These adopted set reference points can then ensure image consistency in future production runs and any post production grading.

5. Once the first camera is correctly set for colour select TOOLS> TRACE MEMORY> SAVE TRACE to save the current parade trace from the first camera.

6. Now connect VSM-200 to the second camera on the set. Adjust the white, black balance and luminance on the next camera as described earlier.

7. Now adjust the colour on the second camera output so that it matches the saved Parade from the first camera. The same procedure can be repeated for any remaining cameras.
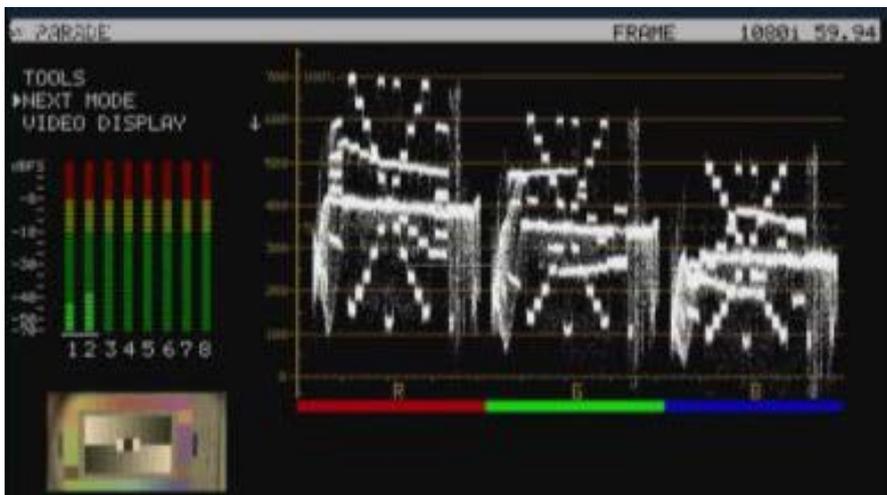
Set your own standard (The colour of the image above is leaning toward red)

Camera output after adjustments (VECTORSCOPE)

1. Under the same on set lighting conditions aim the camera at a colour reference chart (such as DSC labs' Chroma Du Monde).

2. Select VECTORSCOPE mode on the VSM-200 using the NEXT MODE option.

3. Now, the VECTORSCOPE displays the analyzed colour components. If the white balance of one camera had been altered, the VECTORSCOPE matrix can be used as a check point to ensure all cameras have been correctly aligned.


4. Feeding camera output of 75% colour bars into a Video Switcher confirms if the colour image is correct after the switcher too.

VSM-200 Advanced Application

RGB PARADE and White Balance Adjustment

i. Select PARADE mode on the VSM-200 using the NEXT MODE option. Then point the camera at the white background or white reference card.

ii. When the white balance is correctly adjusted, The RGB traces should be flat, balanced, and parallel to one another in a straight line.

iii. When White balance is not correctly adjusted, the PARADE will show unbalanced trace.

iv. When the lighting is not evenly spread-out, the PARADE will show traces which deviate from the straight line.

v. If one of the RGB trace has one end higher than another, it means that the colour has lost its fidelity.
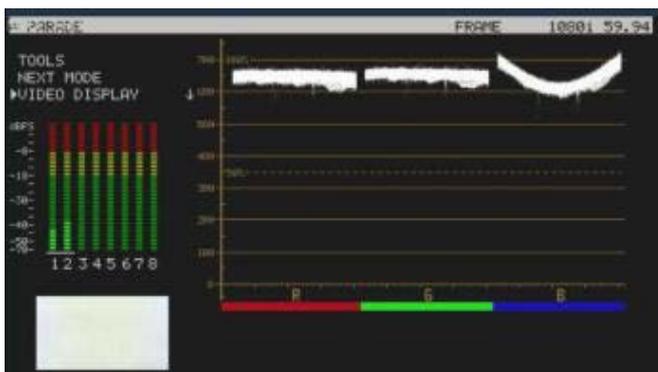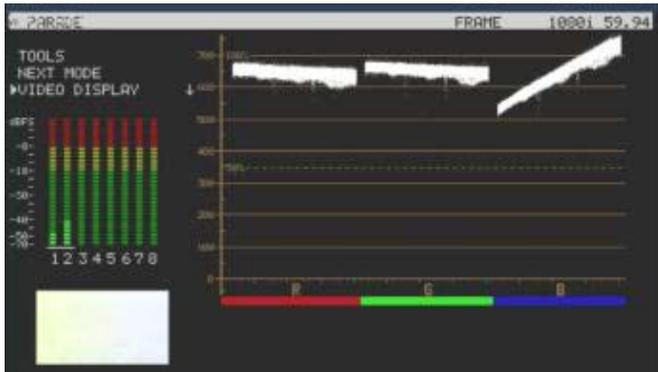
This undesired situation will occur if the camera is not adjusted correctly or you have an uneven colour temperature/ lighting on the background during white balancing.

Camera Noise

i. Adjust the IRIS of the camera to minimum or cap the lens.

ii. Select PARADE mode on the VSM-200 using the NEXT MODE option.

iii. The noise value will be displayed on the chart. The thicker the value on the line chart, the greater the noise level. The thinner the trace on the chart, the less the noisy it is


Comparing colour saturation among cameras

i. Aiming the camera at Chroma Du Monde (Set camera to AUTO).

ii. Select VECTORSCOPE mode on the VSM-200 using the NEXT MODE option.

iii. The VECTORSCOPE matrix displaying on VSM-200 represents the colour components from the camera.

iv. Use the SAVE TRACE feature under TOOLS to compare the colour components between cameras.

v. The matrix indicates the current colour components of the camera by showing the positioning of the dots. When two cameras have aligned luminance, the larger the VECTORSCOPE matrix, the more colour saturation it represents.

Dimension

88.5

482.7

236.5
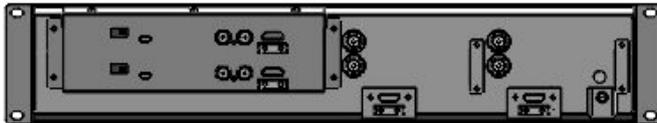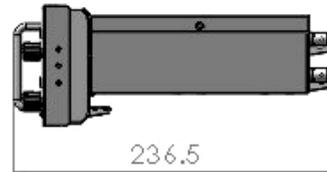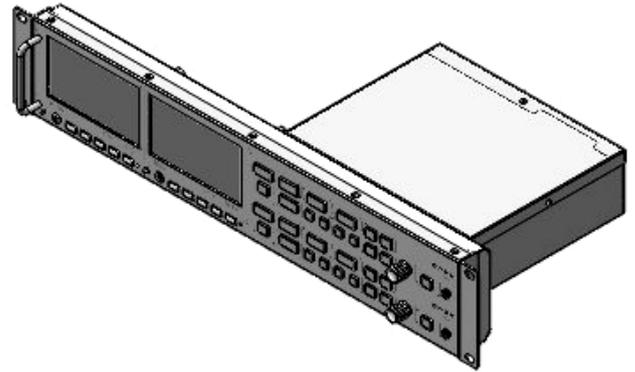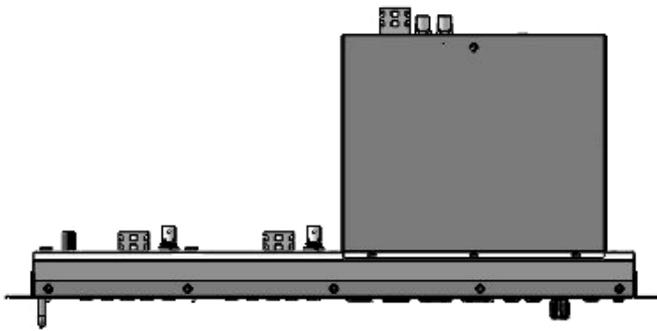
Specification

Monitor

LCD Display	4.3" TFT LCD x 2
Resolution	RGB 480 x 272 pixel
Aspect Ratio	4:3 and 16:9 selectable
Brightness (Luminance)	500 cd/m²
Contrast Ratio	300
Viewing Angle (Monitor Panel)	Top: 50 deg / Bottom: 70 deg Left: 70 deg / Right: 70 deg * 2U 19" rack mount can support adjustable view angle (Tilt 45 degree viewing angle)
Video Input	HD-SDI / SD-SDI / HDMI
Support Format	**HDMI RGB:** 720 x 576i x 50 Hz, 720 x 480i x 60 Hz, 1280 x 720p x 50 Hz, 1280 x 720p x 60 Hz, 1920 x 1080i x 50 Hz, 1920 x 1080i x 60 Hz **SDI:** 720 x 576i / 50 Hz, 720 x 480i / 60 Hz, 1280 x 720p / 60 Hz, 1280 x 720p / 50 Hz, 1920 x 1080i / 50 Hz, 1920 x 1080i / 60 Hz
Video System	NTSC/PAL auto recognition

Sampling Vector Scope

Interface	1x SDI/HD-SDI input (HD-SDI SMPTE 292M 1.5Gbps, SD-SDI SMPTE 259M-C 270Mbps with Embedded Audio) 1x SDI/HD-SDI Loop through output 1x HDMI Output
HD/SD-SDI	SMPTE 259M-C (270Mbps - 525/625 Component Video) and SMPTE 292M (1.485/1.001 Gbps) Connector BNC (IEC 169-8) Impedance 75 Ω Return Loss HD > 10 dB (1.5 GHz) SD > 15 dB (270 MHz) Equalization 200 m Belden 8281 cable at 270 Mbps; 100 m (typical) of Belden 1694A at 1.485 Gbps
HDMI	Supports HDMI V1.3 (10-bits)
Input Standards HD-SDI	1080i50 / 1080i59.97 / 1080i60 / 1080p24 / 1080p25 / 1080p30 / 720p25 / 720p29.97 / 720p30 / 720p50 / 720p59.97 / 720p60
Input Standards SD-SDI	576i / 480i
Modes	Waveform monitor / Vectorscope / Parade / Histogram / Video input display
Acquisition and display	Single field / Whole frame
Waveform monitor	Time zoom / Delay / Non-volatile display storage and recall / Sampling Bandwidth
Vector scope	75% color bar scale / 100% color bar scale / Non-volatile display storage and recall
Parade	Display format: RGB / YCbCr / Non-volatile display storage and recall
Always-on modes	Video input in thumbnail format / 8-Channel audio meter
Inputs	HD, SD-SDI / RS-232 (firmware upgrade)
Outputs	HD, SD-SDI- can be setup as input loop-through as well as Instrument output
	HD, SD-HDMI Note: external terminal must support 720p50, 720p60, and 720p59.5
F/W Upgrade	Yes (thru USB)
Temperature	-5°C ~ 50°C
Humidity	10% to 90% (non condensing)
Dimension (W x H x D)	482.7mm x 88.5mm x 221.2mm

Note

Note

Service & Support

It is our goal to make owning and using Datavideo products a satisfying experience. Our support staff is available to assist you to set up and operate your system. Contact your local office for specific support requests. Plus, please visit www.datavideo.com to access our FAQ section.

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