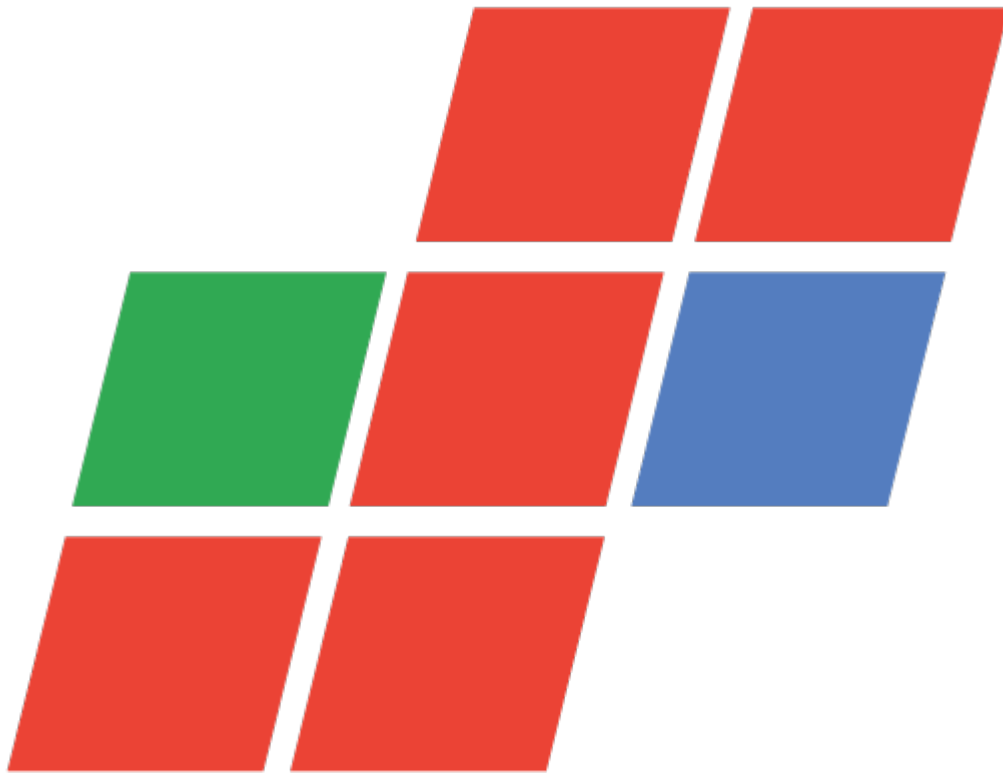


# **sdiScope**

## **Signal Analysis Software**

### **Version 7**



**February 9, 2024**

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Hardware and Media—The Company will either repair or replace (at its option) any defective Hardware component or part, or Software Media, with new or like new Hardware components or Software Media. Components may not be necessarily the same, but will be of equivalent operation and quality.

## **Software Updates**

Except as may be provided in a separate agreement between Drastic Technologies and You, if any, Drastic Technologies is under no obligation to maintain or support the Software and Drastic Technologies has no obligation to furnish you with any further assistance, technical support, documentation, software, update, upgrades, or information of any nature or kind.

## **Restrictions and Conditions of Limited Warranty**

This Limited Warranty will be void and of no force and effect if (i) Product Hardware or Software Media, or any part thereof, is damaged due to abuse, misuse, alteration, neglect, or shipping, or as a result of service or modification by a party other than the Company, or (ii) Software is modified without the written consent of the Company.

## **Limitations of Warranties**

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Geographical Limitation of Warranty—This limited warranty is valid only within the country in which the Product is purchased/licensed.

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## **Damages**

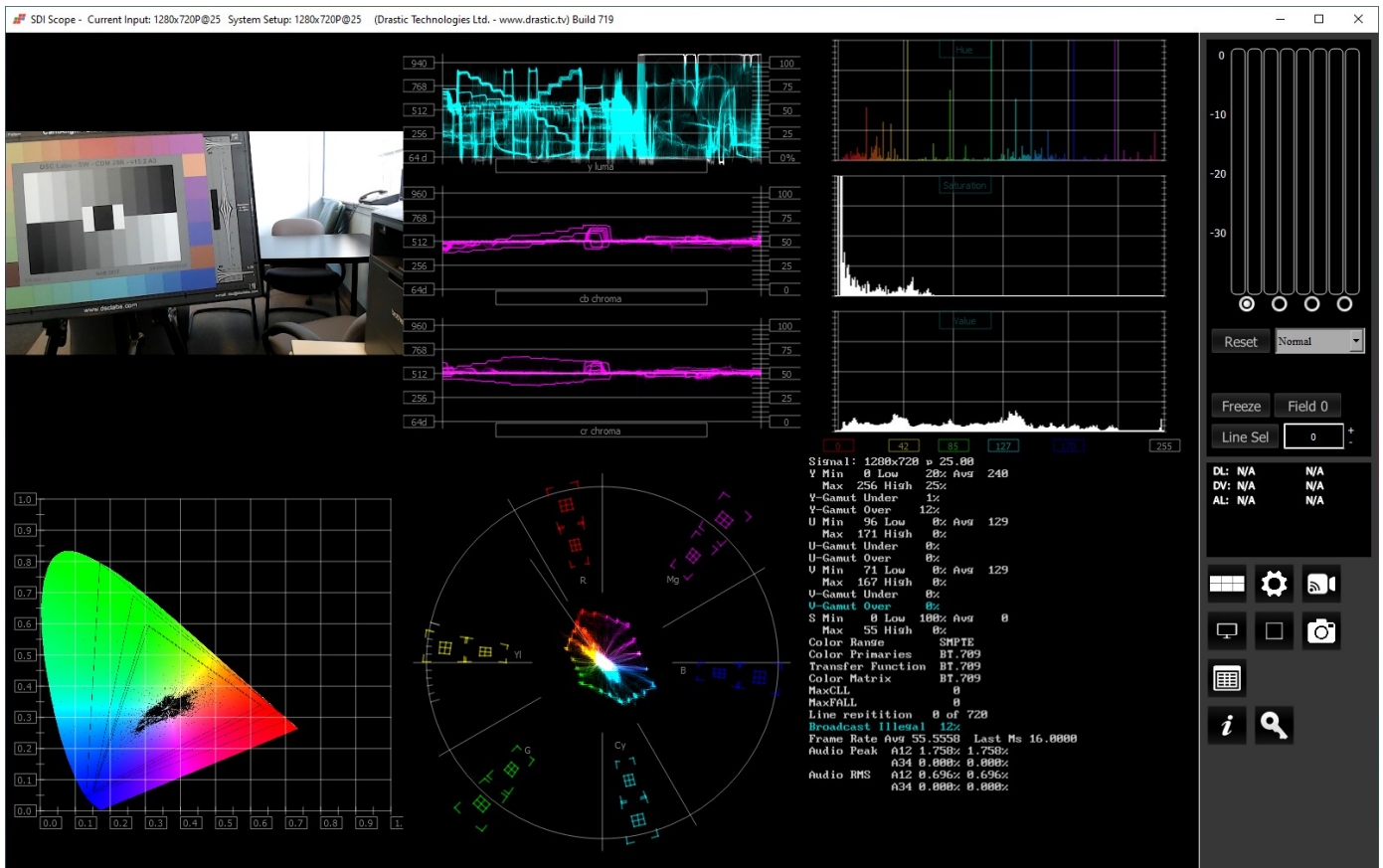
Drastic Technologies Ltd SHALL NOT BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF YOUR USE OR INABILITY TO USE THE PRODUCT, OR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, EVEN IF THE COMPANY HAS BEEN ADVISED OF THE POSSIBILITY OF THOSE DAMAGES, OR ANY REMEDY PROVIDED FAILS OF ITS ESSENTIAL PURPOSE.

Further information regarding this limited warranty may be obtained by writing:

Drastic Technologies Ltd  
523 The Queensway, Suite 201

Toronto, ON, M8V 1J7  
Telephone: (416) 255-5636

# About sdiScope



**sdiScope** is the world's most powerful SD/HD software signal monitoring tool.

sdiScope is available for Windows 10 or greater, and macOS 10.14: Mojave or greater. It provides the following signal analysis tools:

- Picture, with zoom and pan
- Multiple time code display
- Data View
- Vectorscope
- YCbCr Waveform Monitor (stacked, parade, or luma only)
- RGB Waveform Monitor (stacked or parade)
- YCbCr Histogram
- RGB Histogram
- HSV Histogram
- Luma Histogram
- Chromaticity
- Status
- Audio Vectorscope (lissajousxy, Lissajous, Polar)
- Audio Phase
- Audio Histogram (logarithmic or linear)
- Audio Waveform Monitor
- Audio Metering (Loudness, RMS and Peak)

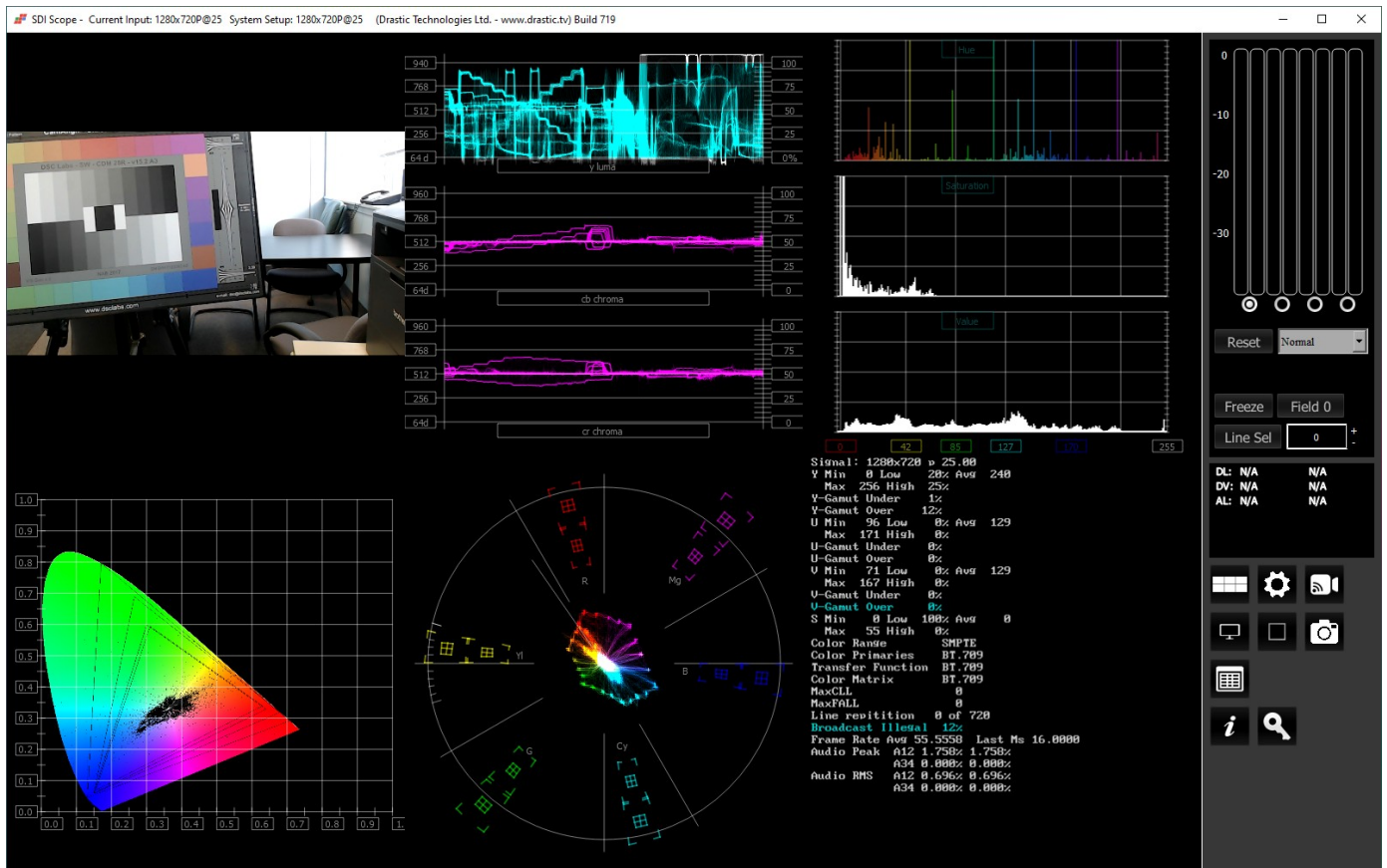
- Freeze and compare
- Save signal and scopes to image
- Standard desktop software



# Reference

The reference section provides a detailed look at each of the elements in the **sdiScope** graphical user interface.

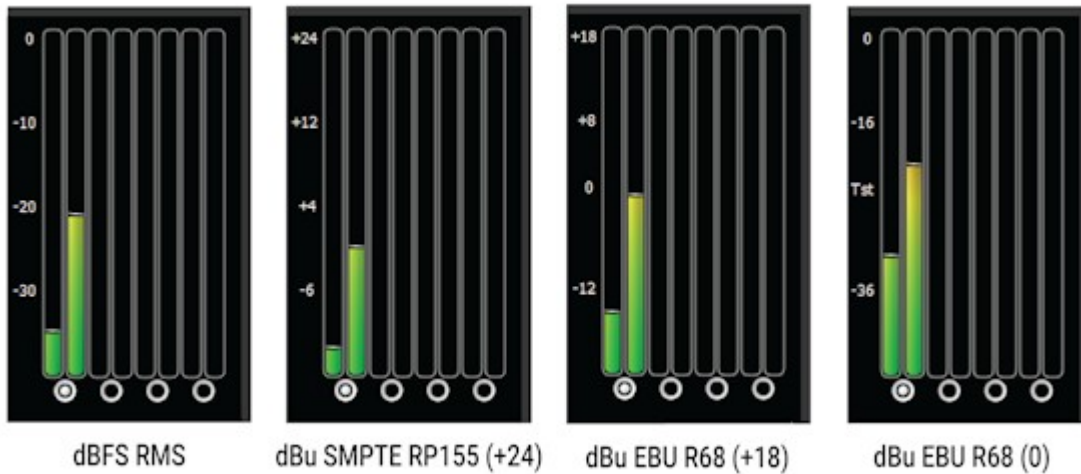
## Main Interface Overview



**Display section** – to the left of the controls (the main portion of the GUI) is the screen where the various scopes, meters, or data will be displayed. sdiScope features four different layouts: a single display that takes up the full area, two scopes side by side, four scopes in a two by two grid, and six scopes (three across, two down). These can be selected in the Scope Config window. The Data View can be selected by clicking the Data View button in the Controls section.

**Controls section** – The panel on the right with the audio meters, status display, and access buttons is the Controls section. Following are details for the Controls section.

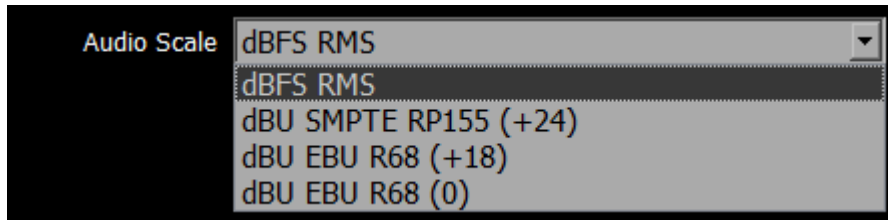
## Audio Controls



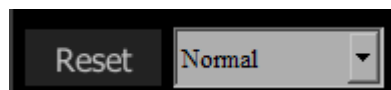
**Audio display and pair selectors** – At the top of the Controls section the audio meters are displayed. There are four supported audio scale types available in sdiScope. In the above spread, the types are all shown (L-R):

- dBFS RMS - decibels relative to Full Scale, root mean squared
- dBu SMPTE RP155 (+24) – decibel units, SMPTE RP155
- dBu EBU R68 (+18) - decibel units, EBU R86
- dBu EBU R68 (0) - decibel units, EBU R86

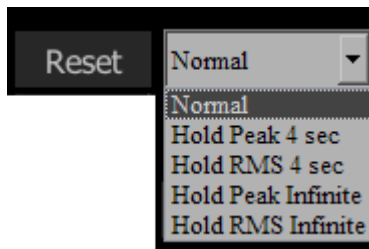
The user can switch between these settings in the Configuration menu.



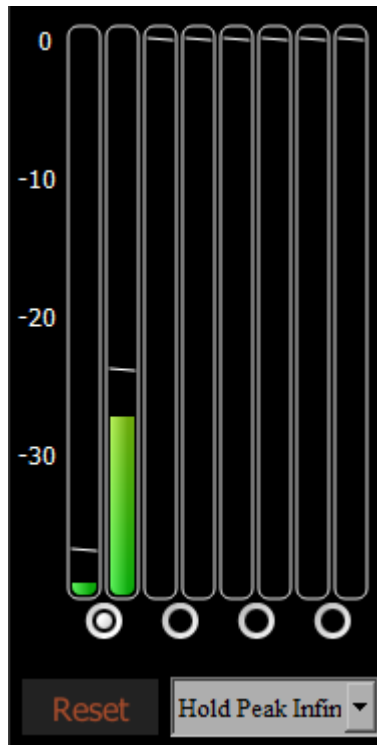
sdiScope was designed as a simple scopes tool, and is limited to two channel audio support. For 4 channel or greater audio support, please see 4KScope, HDRScope, or 2110Scope.



**Hold Peak/RMS** – Just under the audio pair selector buttons there is a reset button and a pulldown menu for options to hold the peak audio level. The following options are available:



These values can be held for either 4 seconds, or frozen (Infinite Hold), or not held. A Reset button exists to clear any Peak/RMS values to refresh the display for a new measurement.

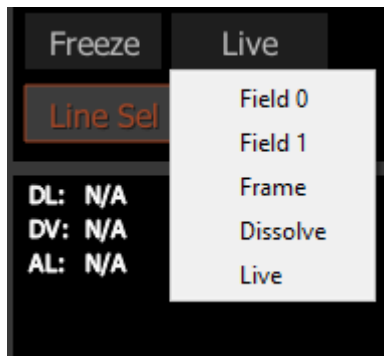


Shown are audio meters with **Peak Hold Infinite** selected. The current audio level is the green bar, and the peak level being held is the white line above the bar. Pressing the **Reset** button sets the peak to the current level.

## Freeze Field/Frame



**Freeze** section – the Freeze button saves an image of the current frame of video for closer inspection or comparison. The button to the right offers a popup menu for the type of image that is created.



**Field/Frame/Live** drop down – selects how a frozen frame will be displayed against the live video

**Field 0** – show field 0 frozen, field 1 live

**Field 1** – show field 1 frozen, field 0 live

**Frame** – show the frozen frame

**Dissolve** – show 50% of the frozen frame and 50% of the live frame

**Live** – show the live video (frozen frame is still saved)

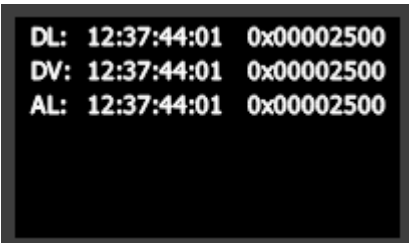
## Line Select



**Line Select** – when clicked, all the video scopes will analyze only the video line in the line selection box next to the button. This line will be highlighted on the in-app video display.

Clicking the plus and minus buttons will increment the line up or down. Pressing the **Line Sel** button sets that line as the line to monitor. Note that horizontal blanking lines are not selectable since they are outside the image area. So, in HD for example, lines below line 41, and lines above line 1121 are not selectable.

## Status Display



**Status Display** – the Status display shows time code and user bits (where present) for:

- RP-188 L SDI inputs
- RP-188 V SDI inputs
- Analog SMPTE time code input

## Scopes Layout and Setup



**Scope Setup** button – The Scope Setup button in the Controls section opens the Scope Config window, which allows the user to configure how many scopes are displayed, to switch between scopes, and to set up each particular scope.

### Layout Options

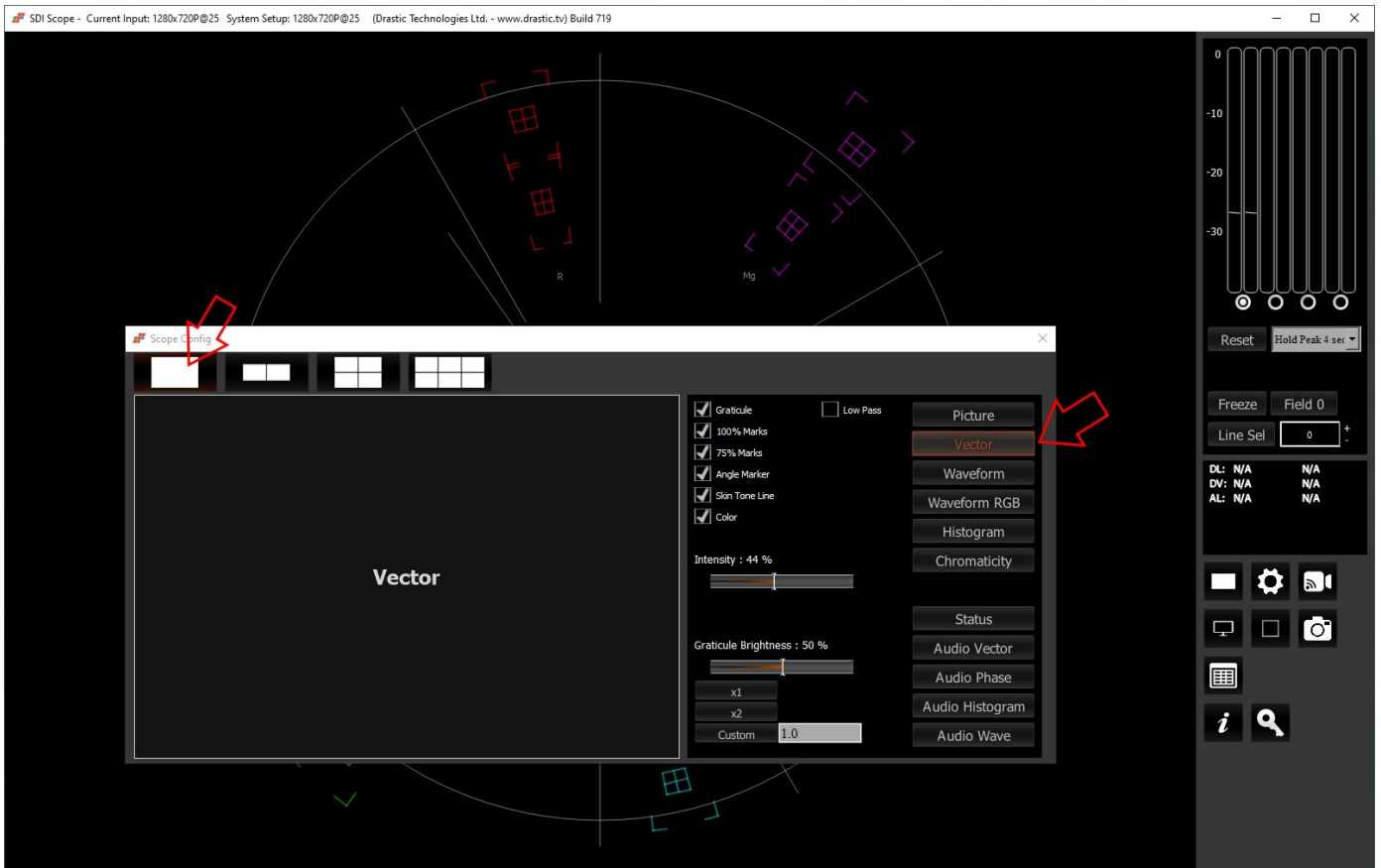
Press the Setup button, and select the layout that suits your workflow:



From left to right, the choices are: 1 scope (single), 2 scopes (side by side), 4 scopes (2 x 2 grid), or 6 scopes (two rows of three scopes).

# Single Scope Layout

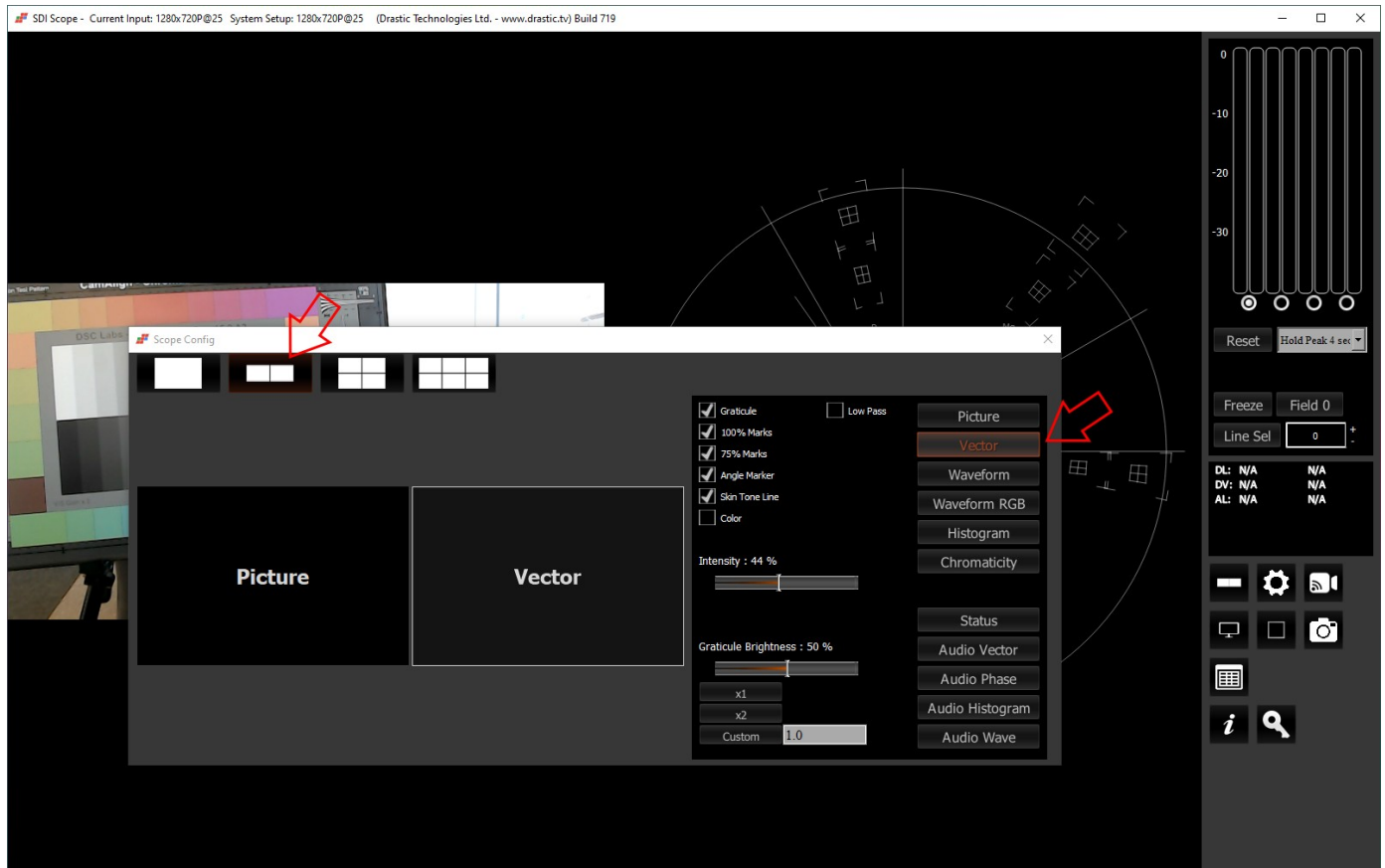
A single scope layout has been selected.



The arrow on the left shows the button used to select the single scope layout. The example shown displays the selection of a vectorscope. The arrow on the right shows the button used to select the vectorscope.

## Two Scopes Layout

The two scopes layout has been selected.



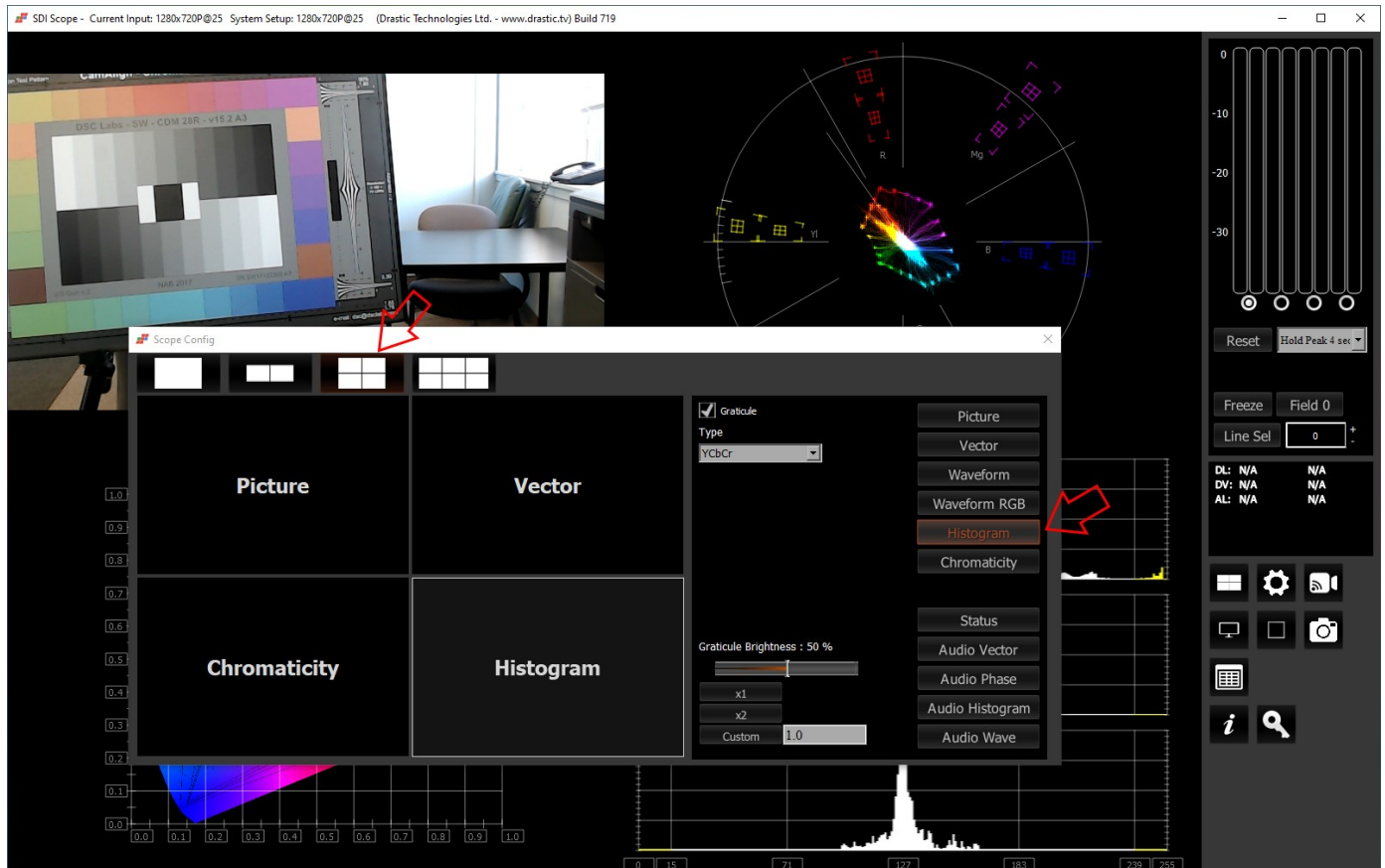
The arrow on the left shows the button used to select the two scopes layout. The example shown features the picture view and the vectorscope. The arrow on the right shows the button used to select the vectorscope.

To change which scope appears in a panel, click on it and use the selection buttons on the right to choose the scope. For example if you would like a waveform monitor on the left panel, you would click on the left panel, and click on the appropriate waveform button.



## Four Scopes Layout

The four scopes layout has been selected.

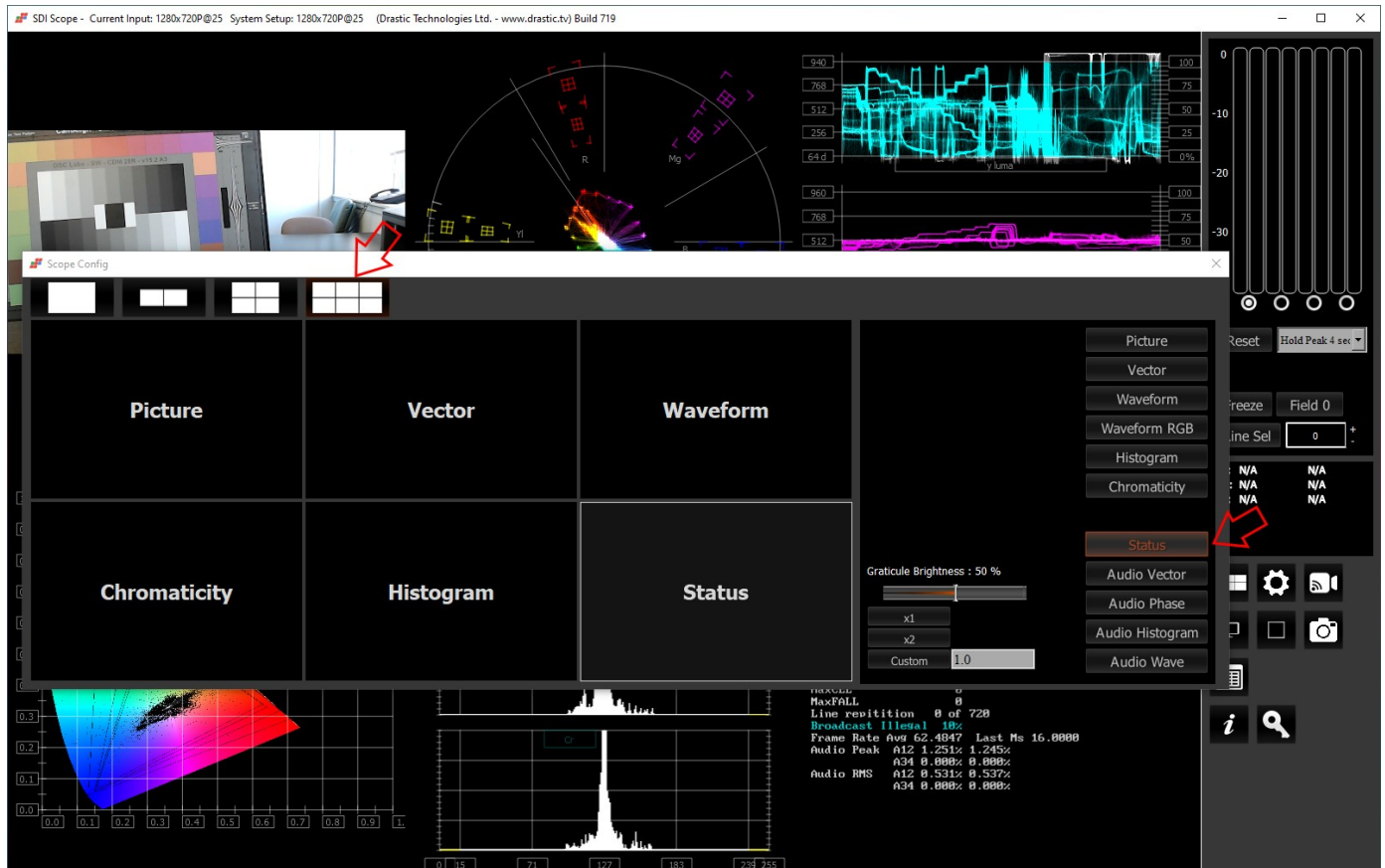


The arrow on the left shows the button used to select the four scopes layout. The example shown features the picture view, the vectorscope, the chromaticity, and the YCbCr histogram. The arrow on the right shows the button being used to select the histogram.

To change which scope appears in a panel, click on it and use the selection buttons on the right to choose the scope. For example if you would like a waveform monitor on the lower left panel, you would click on the left panel, and click on the appropriate waveform button.

## Six Scopes Layout

The six scopes layout has been selected.



The arrow on the left shows the button used to select the six scopes layout. The example shown features the picture view, the vectorscope, the YCbCr waveform, the chromaticity, the YCbCr histogram, and the Status display. The arrow on the right shows the button being used to select the status view.

To change which scope appears in a panel, click on it and use the selection buttons on the right to choose the scope. For example if you would like an audio waveform display on the lower left panel, you would click on the left panel, and click on the appropriate waveform button.

## Picture View

To set up the Picture view, press the **Scope Config** button. This opens the Scope Config window. Click on the **Picture** button on the right. There are a number of options to set up the picture view:



**Action Safe** checkbox - when selected, the Action Safe graticule is displayed over the video output.

**Title Safe** checkbox - when selected, the Title Safe graticule is displayed over the video output.

**Graphic Safe** checkbox - when selected, the Graphic Safe graticule is displayed over the video output.

**Picture Frame** checkbox - when selected, the Picture Frame graticule is displayed over the video output.

**Active Region** checkbox - when selected, the Active region graticule is displayed over the video output.

**Graticule Brightness** slider - Moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

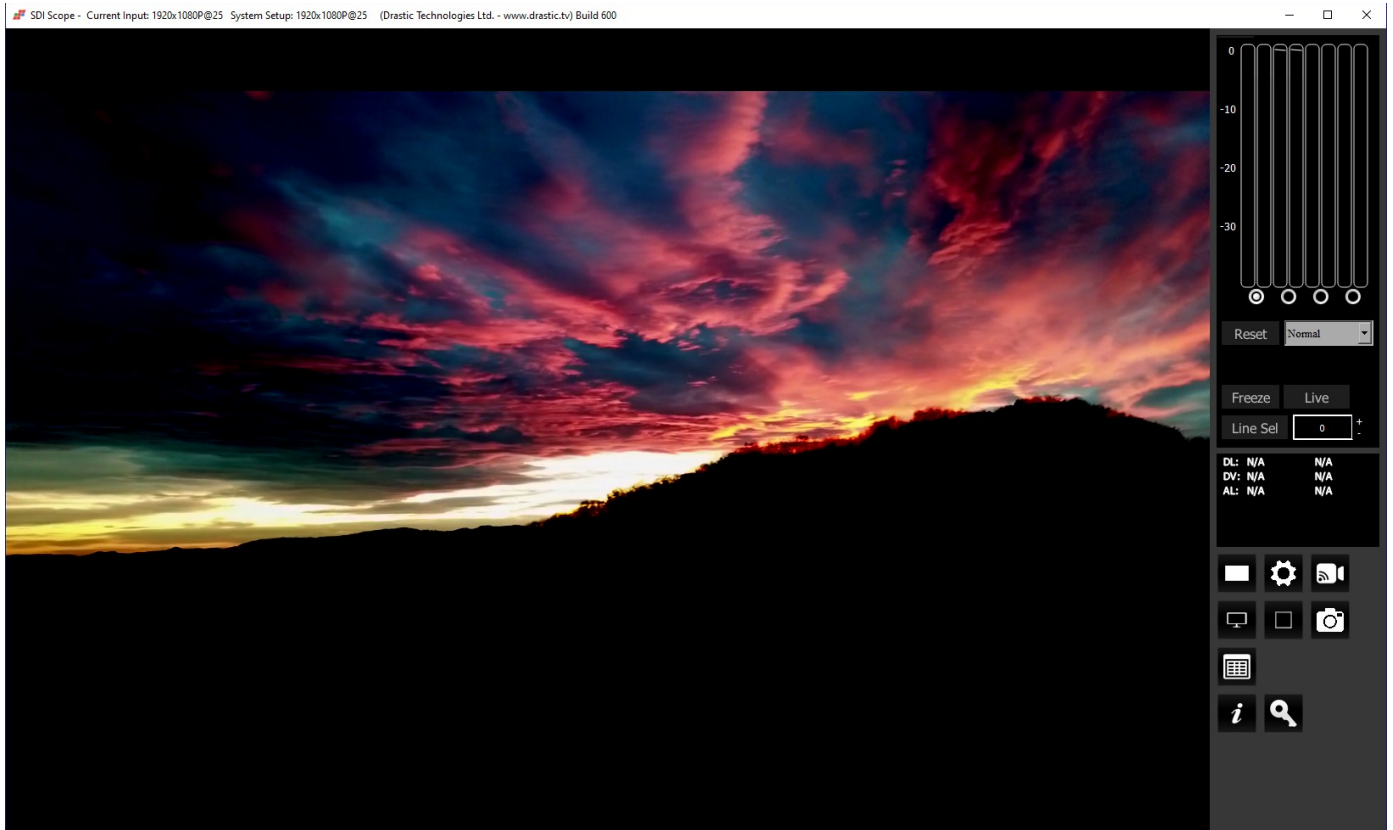
**x1** button - clicking this button sets the display to standard size

**x2** button - clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field - The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

Here is the Picture view.



The Picture view shows the video signal, to confirm the source is correct. Action Safe, Title Safe, Graphic Safe, Picture Safe, and Active Region graticules may be optionally overlaid.

# Vectorscope

## Vectorscope Setup

To set up the vectorscope, press the **Scope Config** button. This opens the Scope Config window. Click on the **Vector** button on the right. There are a number of options to set up the vectorscope:



**Graticule** checkbox – when selected, the graticule is laid over the Vectorscope. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Low Pass** checkbox - when selected, smooth the scope with a 1/3 filter to remove single pixel anomalies.

**100% Marks** checkbox – when selected, the 100% Marks are displayed over the Vectorscope

**75% Marks** checkbox - when selected, the 75% Marks are displayed over the Vectorscope

**Angle Marker** checkbox - when selected, the Angle Marker is displayed over the Vectorscope

**Skin Tone Line** checkbox - when selected, the Skin Tone Line is displayed over the Vectorscope

**Color** checkbox – when selected, the lines, regions, and points of the signal in the vectorscope are drawn in their respective colors.

**Intensity** slider – Moving the Intensity slider brightens or dims the display of the trace through the Vectorscope. The current setting is displayed above the slider, as a percentage, 0% providing no display and 100% being maximum intensity.

**Graticule Brightness** slider - Moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

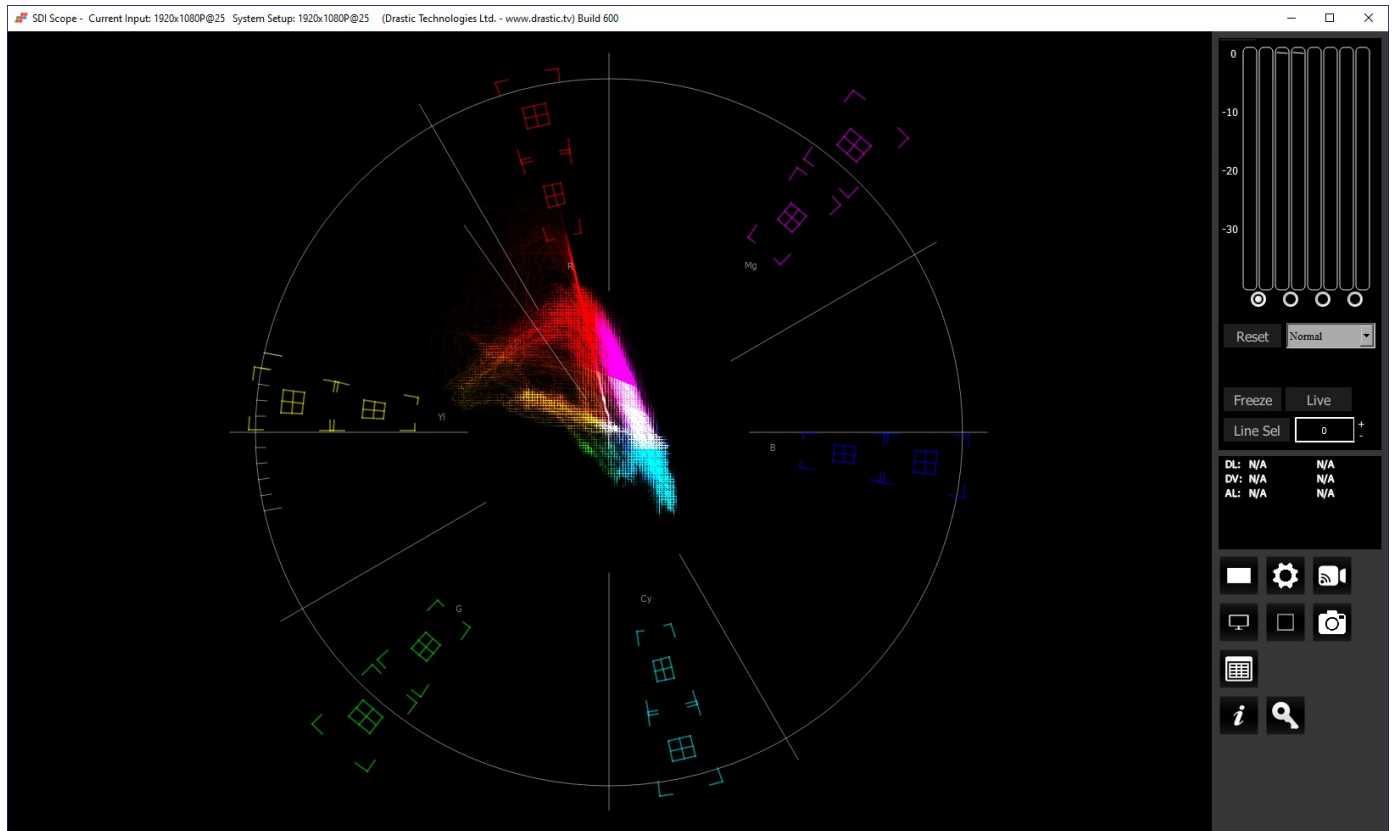
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Vectorscope Window

Here is the Vectorscope.



The **Vectorscope** displays a traditional Cb by Cr X-Y display with overlaid reference graticule. Color accurate graticules automatically switch between SD and HD color spaces. The markers include color points (for standard bar checks) at 75% and 100% saturation. All the standard points are boxed; red, magenta, blue, cyan, green and yellow. A skin tone/flesh line is provided to allow for easy hue adjustment as well as standard diagonals.

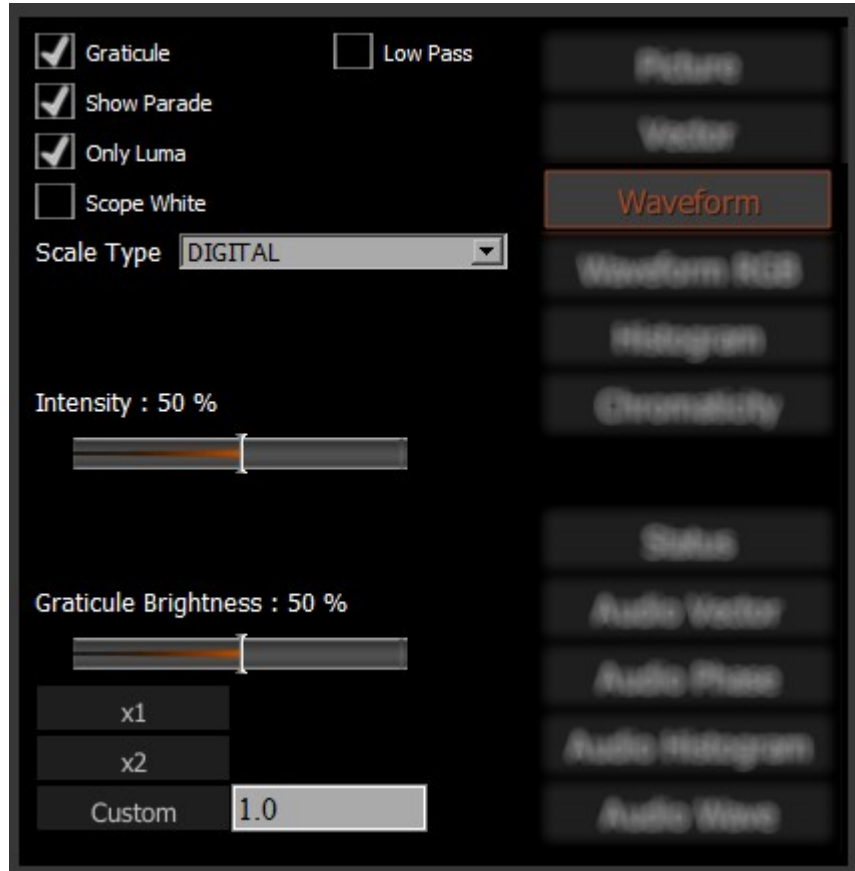
At all times a minimum and maximum value for each of the channels (Y, Cr and Cb) is displayed in 10 bit mode (0-1023). The color of the text for each channel indicates the following: in range (green), out of range but legal (yellow) and illegal/sync values (red).

For single link 8 and 10 bit YCbCr signals, there is no color processing involved. For dual link 4:4:4 RGB signals, the equivalent Cb and Cr are calculated to create the display.

# Waveform YCbCr

## Waveform YCbCr Setup

To set up the Waveform YCbCr, press the **Scope Config** button. This opens the Scope Config window. Click on the **Waveform** button on the right. There are a number of options to set up the waveform:

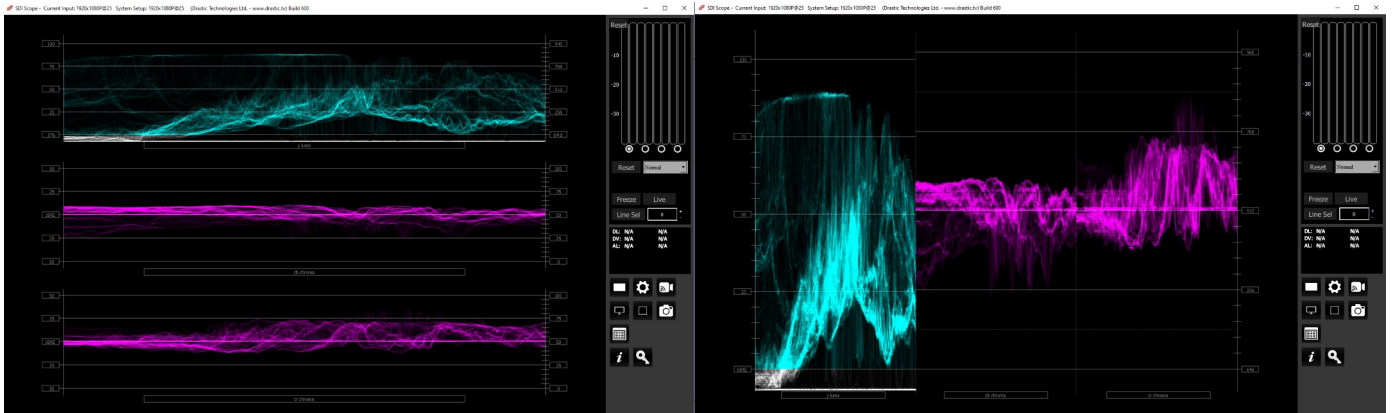


**Graticule** checkbox – when selected, the graticule is laid over the Waveform YCbCr display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

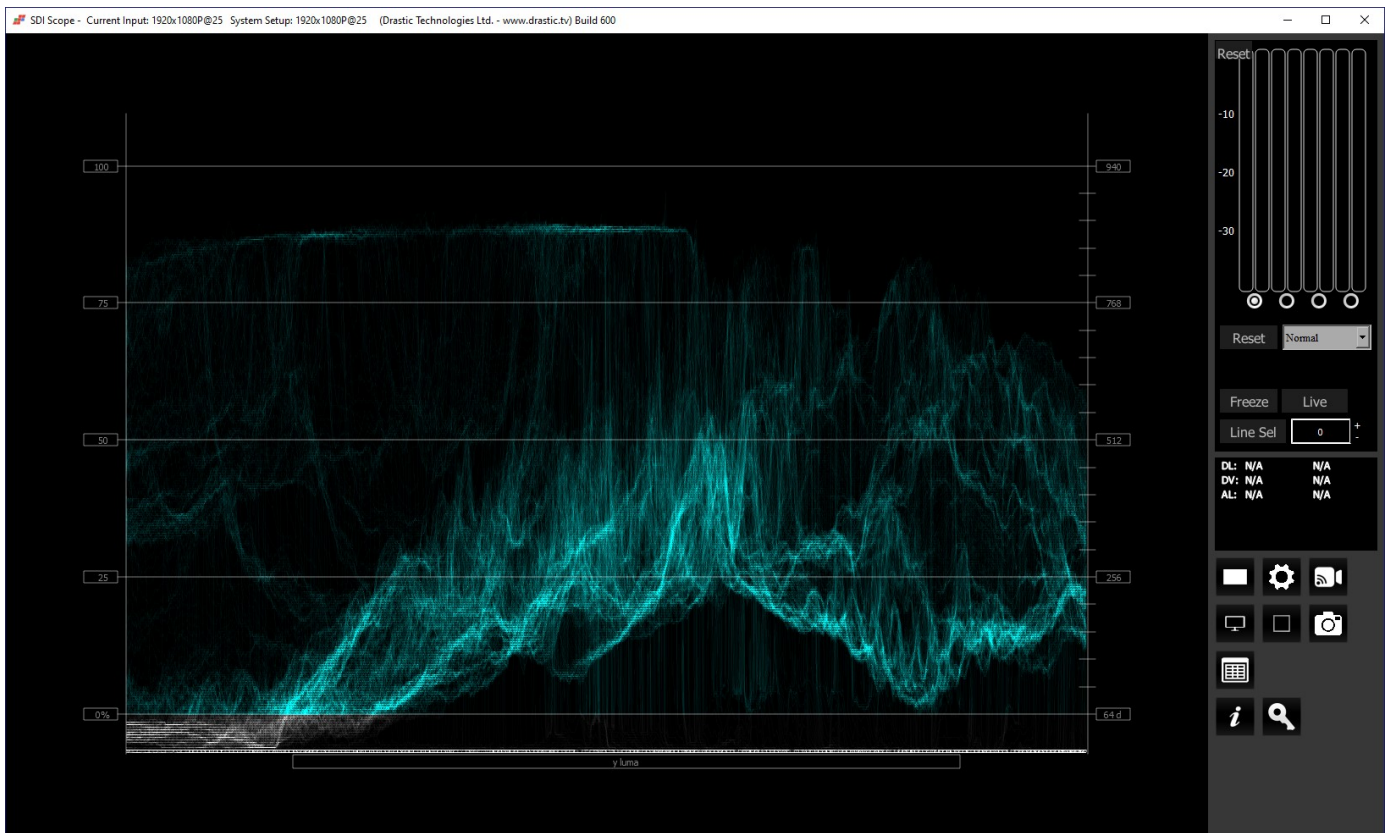
**Low Pass** checkbox – when selected, smooth the scope with a 1/3 filter to remove single pixel anomalies.



**Show Parade** checkbox – when selected, the display is from left to right. When not selected, the display is stacked top to bottom.



**Only Luma** checkbox – when selected, displays only the luminance of the signal.



**Scope White** checkbox – turns the trace white.

**Scale Type** pulldown – set the type of scale used to draw the histogram. Choices include:

- **Digital** - the actual 0..255, 0..1023 or 0..4095 numeric values of the signal.
- **MV** - the equivalent millivolts value of the signal if it was converted to analog.
- **IRE** - Institute of Radio Engineers units, spanning 0..100.

**Intensity** slider – Moving the Intensity slider brightens or dims the display of the trace through the Vectorscope. The current setting is displayed above the slider, as a percentage, 0% providing no display and 100% being maximum intensity.

**Graticule Brightness** slider - Moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button - clicking this button sets the display to standard size

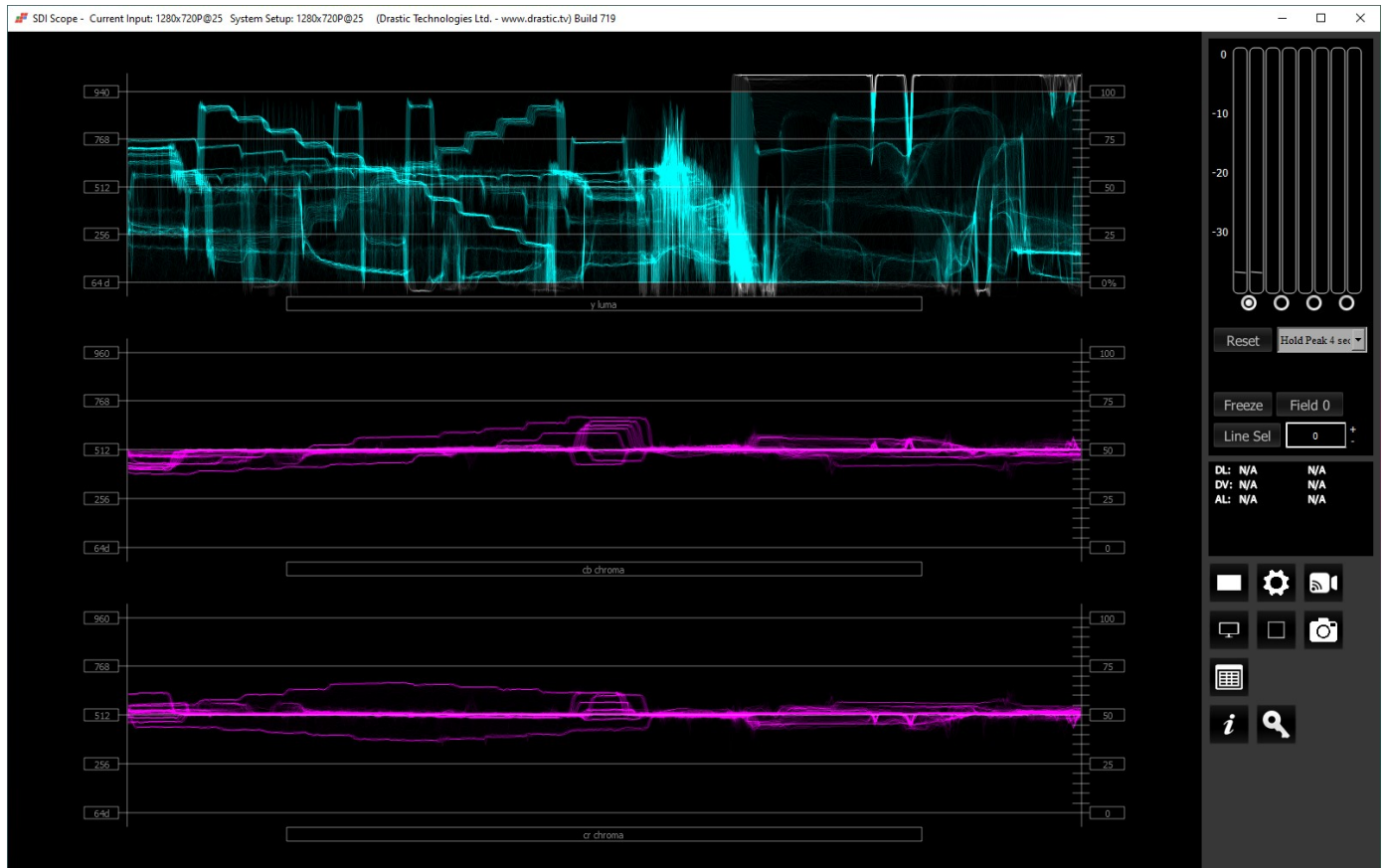
**x2** button - clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field - The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Waveform YCbCr Window

Here is the Waveform YCbCr.



The YCbCr Waveform Monitor displays the levels of the Y, Cb and Cr from the left of the picture to the right of the picture with all the lines summed into one graph. The Y, or luma/luminance, graph provides accurate white and black level information, as well as the range in between. The Cb and Cr display the +/- 512 levels of chroma of both types. This provides a visual representation of the chroma range of the signal.

Critical for downstream color correction is the need to ensure proper luminance levels at the stage of initial capture, so any corrections will not muddy or wash out the signal information.

At all times a minimum and maximum value for each of the channels (Y, Cr and Cb) is displayed in 10 bit mode (0-1023). The color of the text for each channel indicates the following: in range (green), out of range but legal (yellow) and illegal/sync values (red).

# Waveform RGB

## Waveform RGB Setup

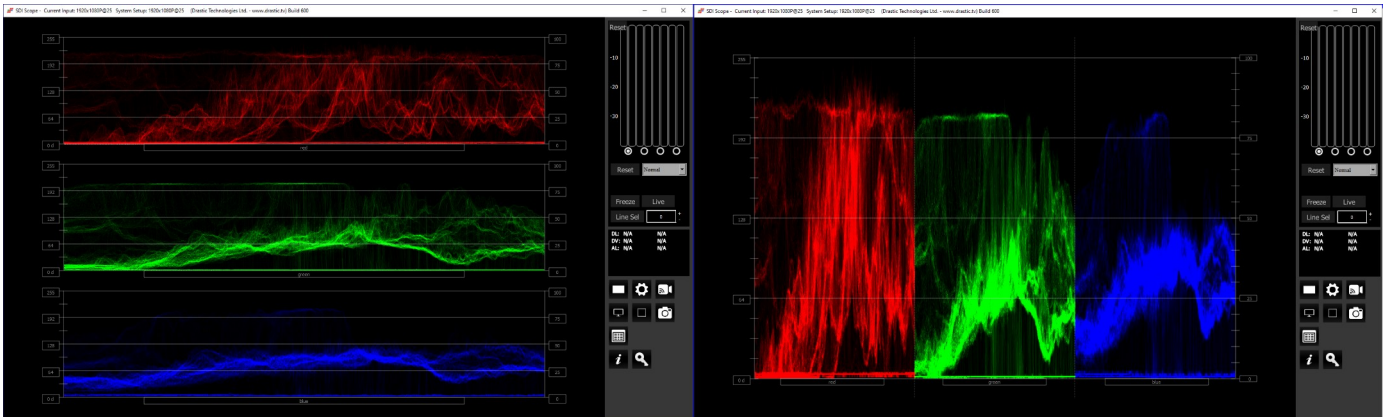
To set up the Waveform RGB press the **Scope Config** button. This opens the Scope Config window. Click on the **Waveform RGB** button on the right. There are a number of options to set up the Waveform RGB:



**Graticule** checkbox – when selected, the graticule is laid over the Waveform RGB display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Low Pass** checkbox - Smooth the scope with a 1/3 filter to remove single pixel anomalies.

**Show Parade** checkbox – when selected, the display is from left to right. When not selected, the display is stacked top to bottom.



**Full Scale** checkbox – RGB, by default, will be sRGB. The range of each color will be from 16 to 240 (in 8 bit), so the scale will place white at 240 and black at 16 in normal scale. If in full scale, white will be placed at 255 and black at 0. This setting changes the graticule so if you have a Full Scale signal, the graticule will line up properly with the signal.

**Scope White** checkbox – turns the display white.

**Intensity** slider – Moving the Intensity slider brightens or dims the display of the trace. The current setting is displayed above the slider, as a percentage, 0% providing no display and 100% being maximum intensity.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

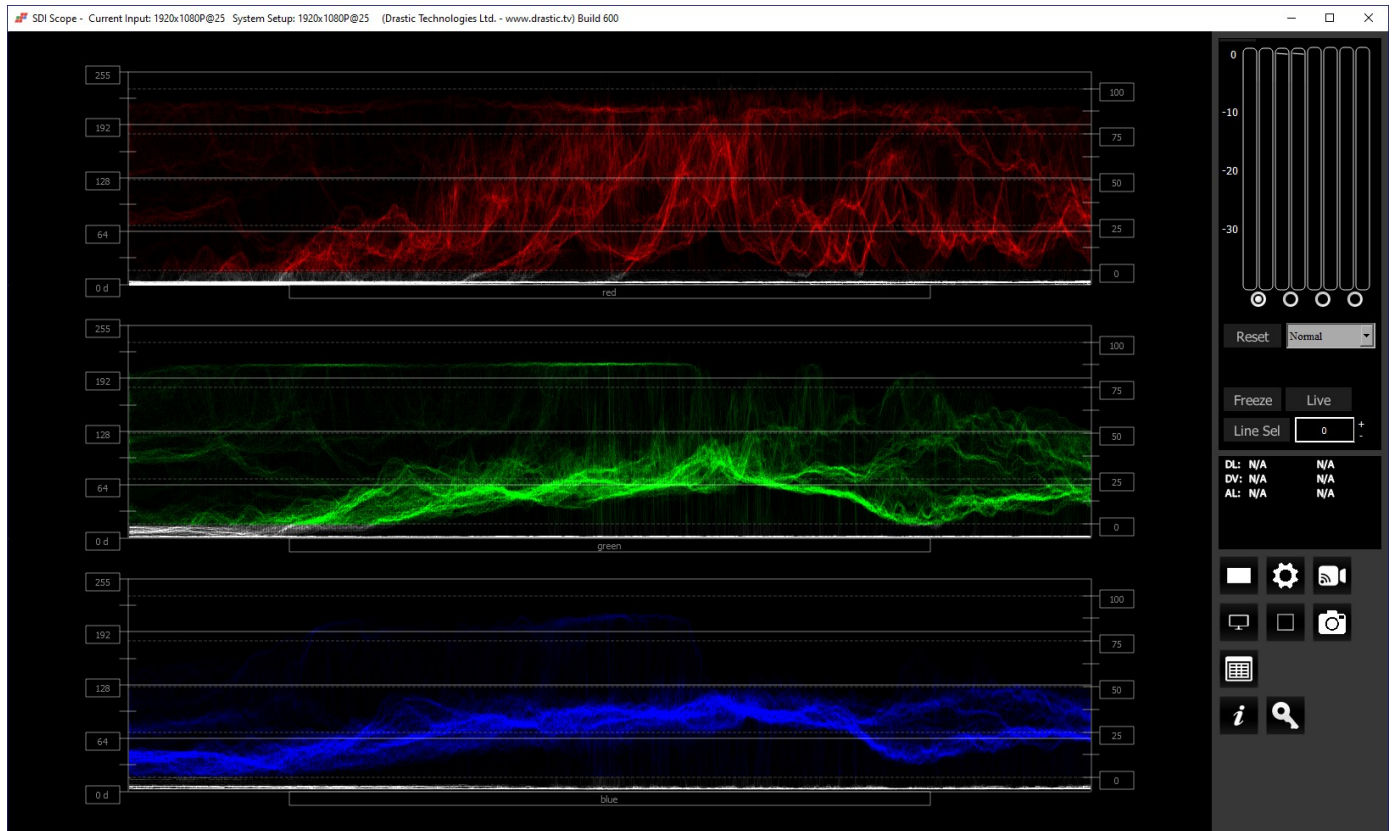
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Waveform RGB Window

Here is the Waveform RGB.



The RGB Waveform Monitor shows each of the red, green and blue signals as independent graphs, displaying the RGB, or chrominance/color values associated with the signal.

At all times a minimum and maximum value for each of the channels (R, G, B, and A) is displayed in 10 bit mode (0-1023).

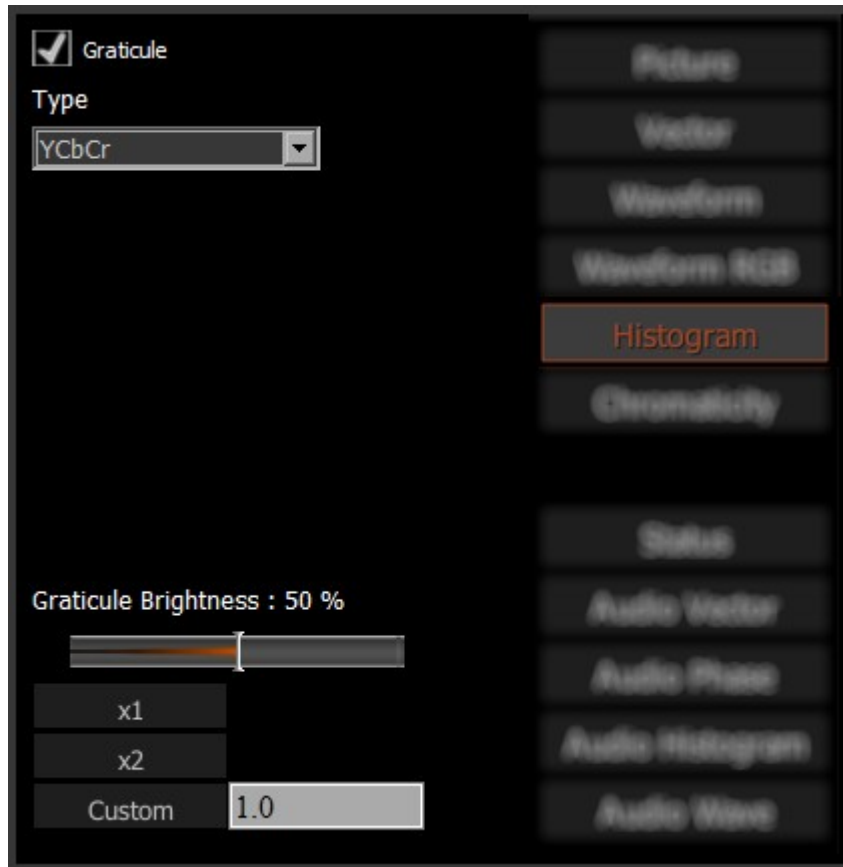
For single link YCbCr signals, they are first converted to RGB before being analyzed and displayed.

# YCbCr Histogram

## YCbCr Histogram Setup

There are four Histograms available in the histogram panel: the YCbCr Histogram, RGB Histogram, HSV Histogram, and Luma Histogram.

To set up the YCbCr Histogram press the **Scope Config** button. This opens the Scope Config window. Click on the **Histogram** button on the right. Then use the pulldown menu to select YCbCr. There are a number of options to set up the YCbCr Histogram:



**Graticule** checkbox – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

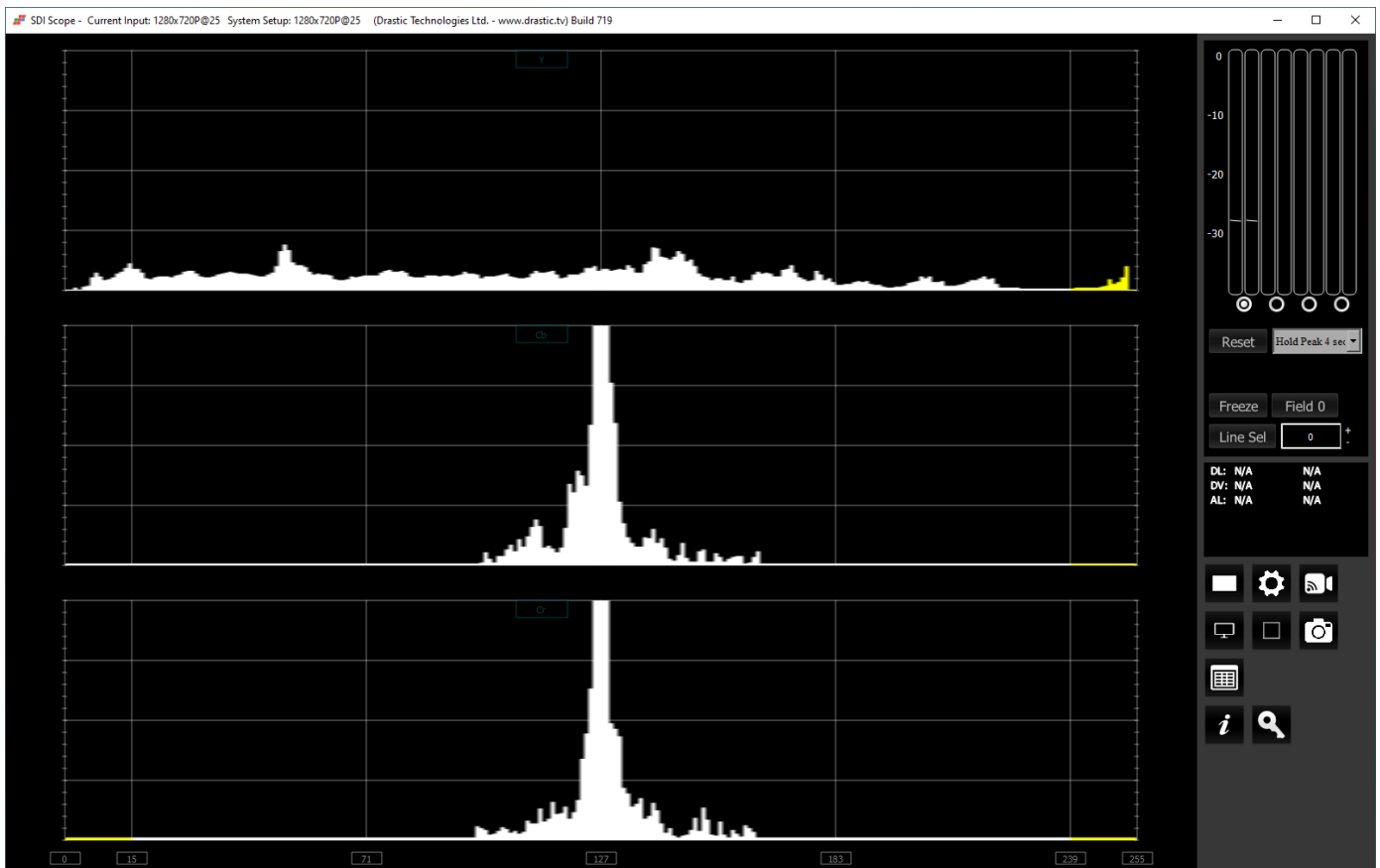
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## YCbCr Histogram Window

Here is the YCbCr Histogram.



**YCbCr** - displays a YCbCr range. This histogram breaks up the signal in into luma and chroma components. The top histogram represents the luma power of the various levels in the signal. The Cb and Cr histograms that follow show the power distribution for those two components.

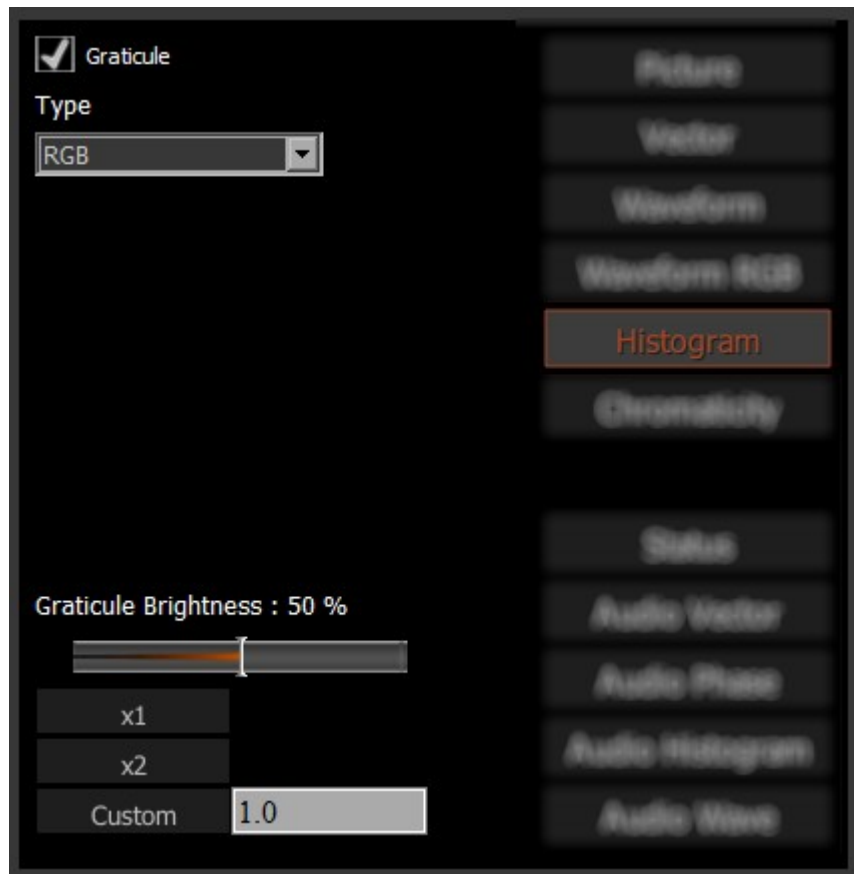


# RGB Histogram

## RGB Histogram Setup

There are four Histograms available in the histogram panel: the YCbCr Histogram, RGB Histogram, HSV Histogram, and Luma Histogram.

To set up the RGB Histogram press the Scope Config button. This opens the Scope Config window. Click on the Histogram button on the right. Then use the pulldown menu to select RGB. There are a number of options to set up the RGB Histogram:



**Graticule checkbox** – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the Graticule Brightness slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

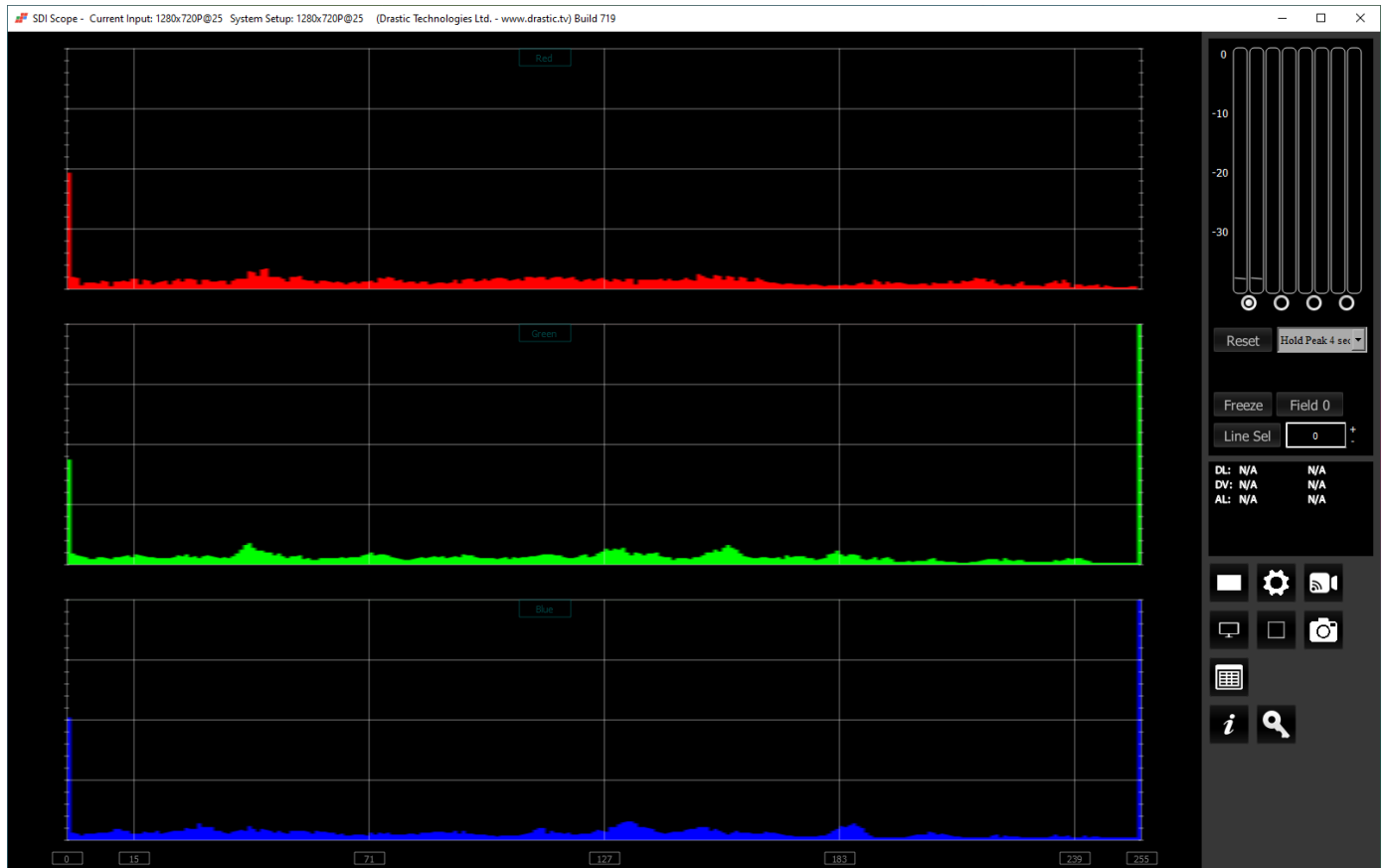
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## RGB Histogram Window

Here is the RGB Histogram:



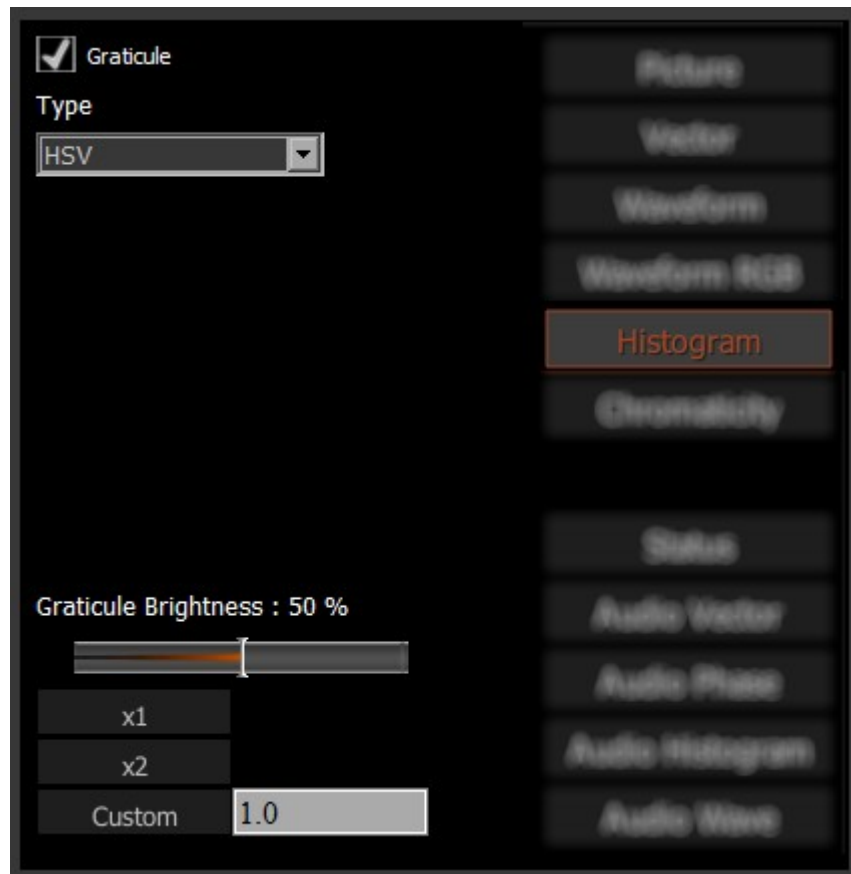
**RGB** – display an RGB range. Shows the distribution of red/green/blue within the signal as a series of discrete bars that make a continuous graph for each color. This display provides an overview of the tonal range of each color in the picture. Each bar is the count of the number of pixels for one of the 256/1024/4096 possible bins.

# HSV Histogram

## HSV Histogram Setup

There are four Histograms available in the histogram panel: the YCbCr Histogram, RGB Histogram, HSV Histogram, and Luma Histogram.

To set up the HSV Histogram press the Scope Config button. This opens the Scope Config window. Click on the Histogram button on the right. Then use the pulldown menu to select HSV. There are a number of options to set up the Histogram HSV:



**Graticule checkbox** – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the Graticule Brightness slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

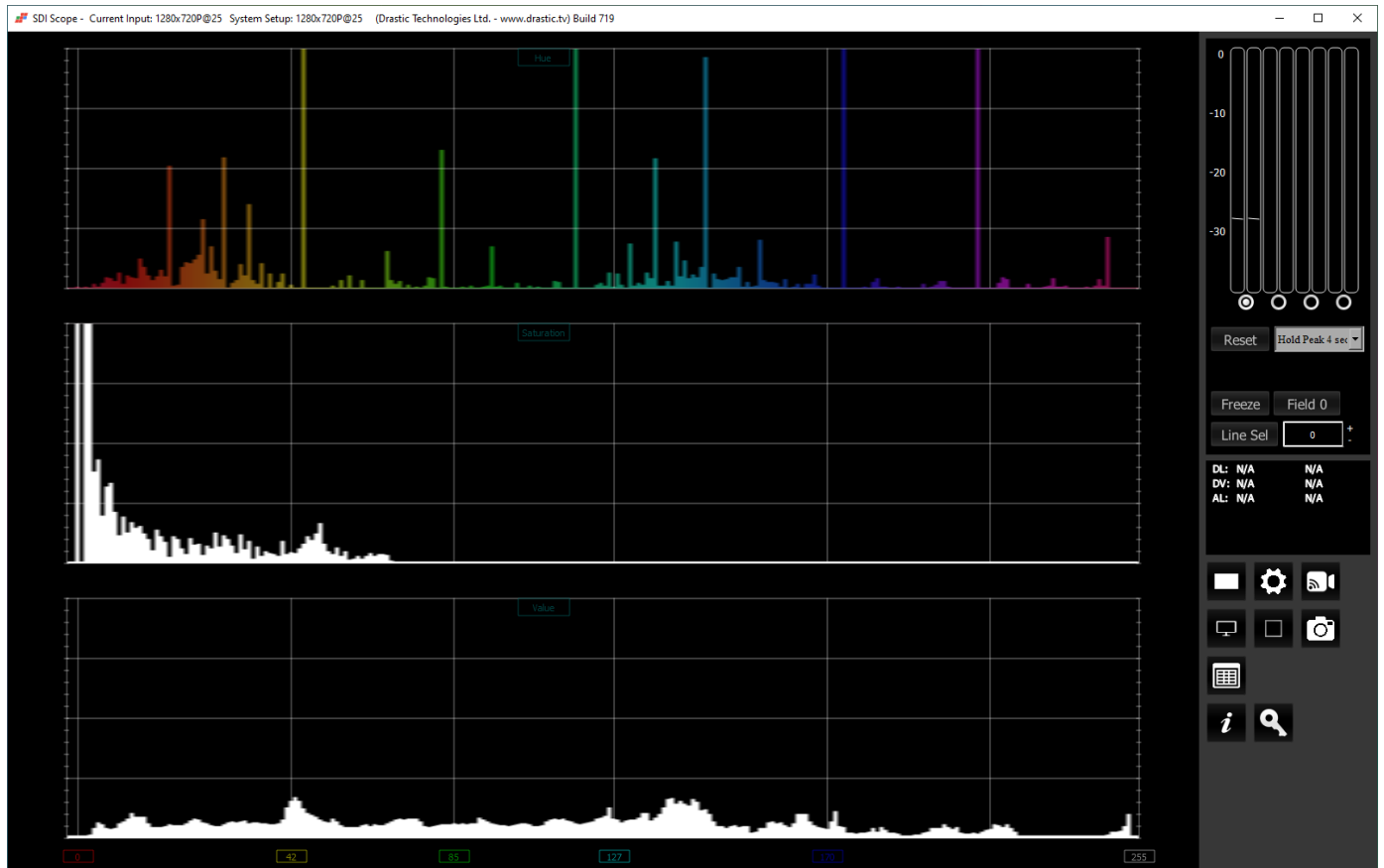
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

# HSV Histogram Window

Here is the HSV Histogram:



**HSV** – display Hue, Saturation, and Value levels. The top range shows the strength of each hue, the middle section displays the saturation levels of the hues, and the lower section displays the value, or darkness/lightness levels.

# Luma Histogram

## Luma Histogram Setup

There are four Histograms available in the histogram panel: the YCbCr Histogram, RGB Histogram, HSV Histogram, and Luma Histogram.

To set up the Luma Histogram press the Scope Config button. This opens the Scope Config window. Click on the Histogram button on the right. Then use the pulldown menu to select Luma. There are a number of options to set up the Luma Histogram:



**Graticule checkbox** – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the Graticule Brightness slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

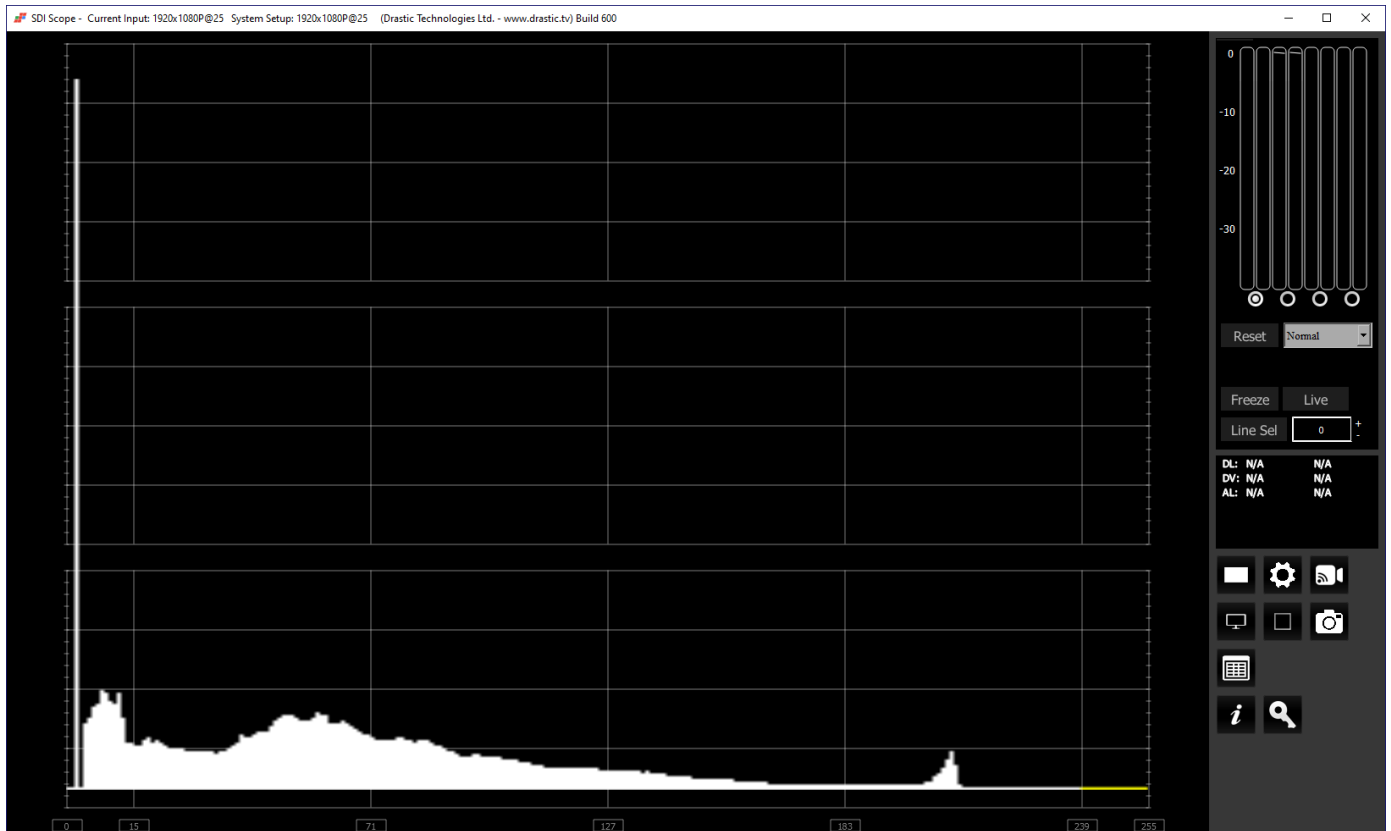
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Luma Histogram Window

Here is the Luma Histogram:

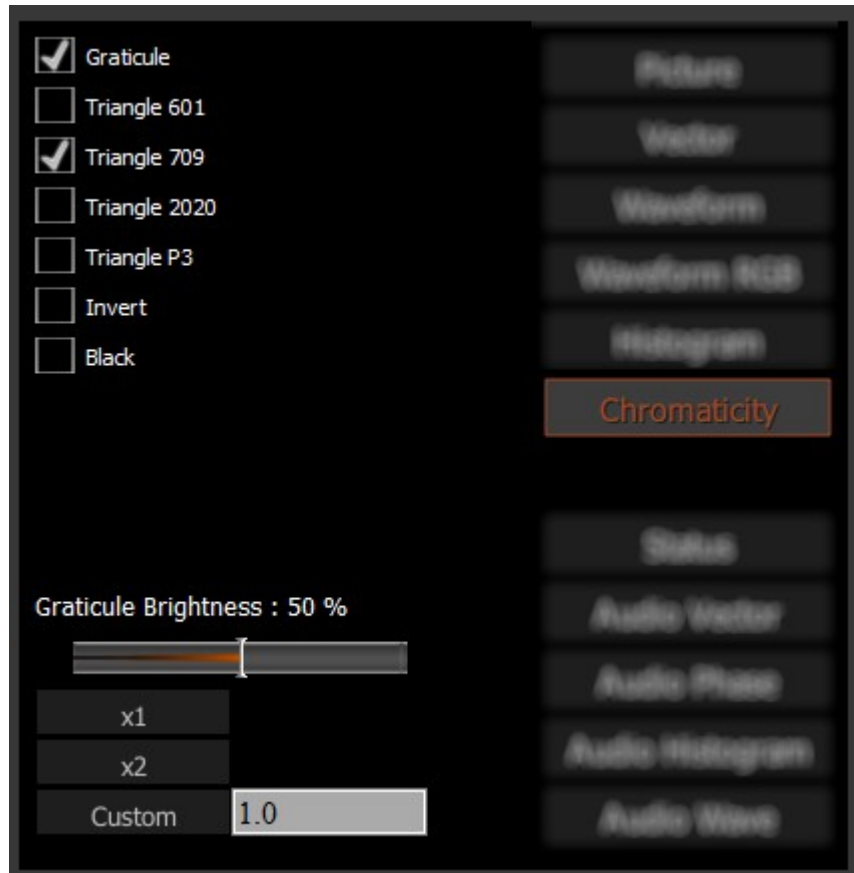


**Luma** – display only the luma in the signal

# Chromaticity

## Chromaticity Setup

To set up the Chromaticity press the **Scope Config** button. This opens the Scope Config window. Click on the **Chromaticity** button on the right. There are a number of options to set up the Chromaticity display:



**Graticule** checkbox – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Triangle 601** checkbox – when selected, displays the CCIR-601 (Rec. 601 or BT.601) triangle.

**Triangle 709** checkbox – when selected, displays the Rec.709 (BT.709 or ITU 709) triangle.

**Triangle 2020** checkbox – when selected, displays the BT.2020 (or Rec. 2020) triangle.

**Triangle P3** checkbox – when selected, displays the P3 (DCI-P3 or DCI/P3) triangle.

**Invert** checkbox – when selected, displays the video signal over a black background instead of the Chromaticity hued background.

**Black** checkbox – when selected, displays the video as black. If unselected, the video will be displayed as white.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

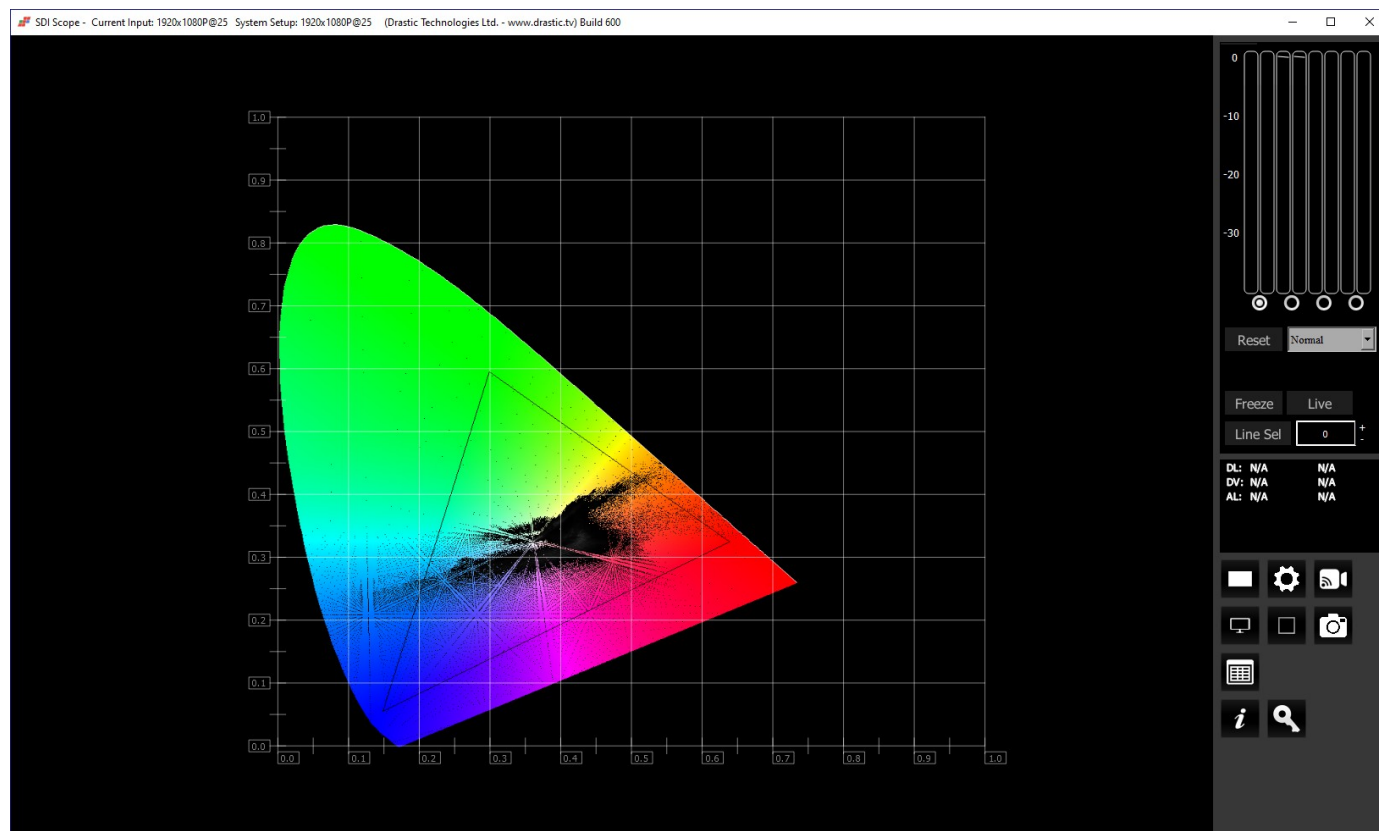
**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

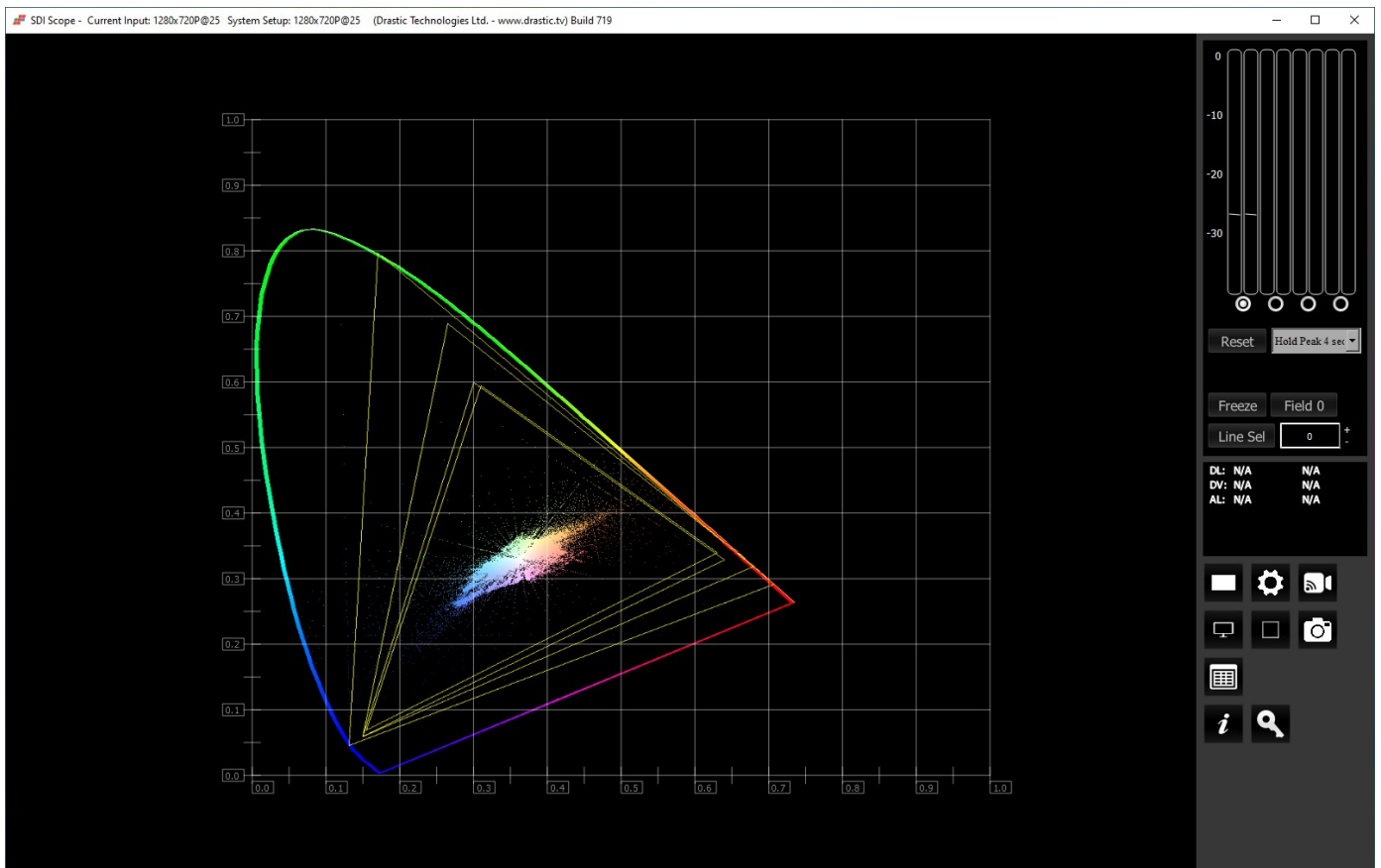


## Chromaticity Window

Here is the Chromaticity window.

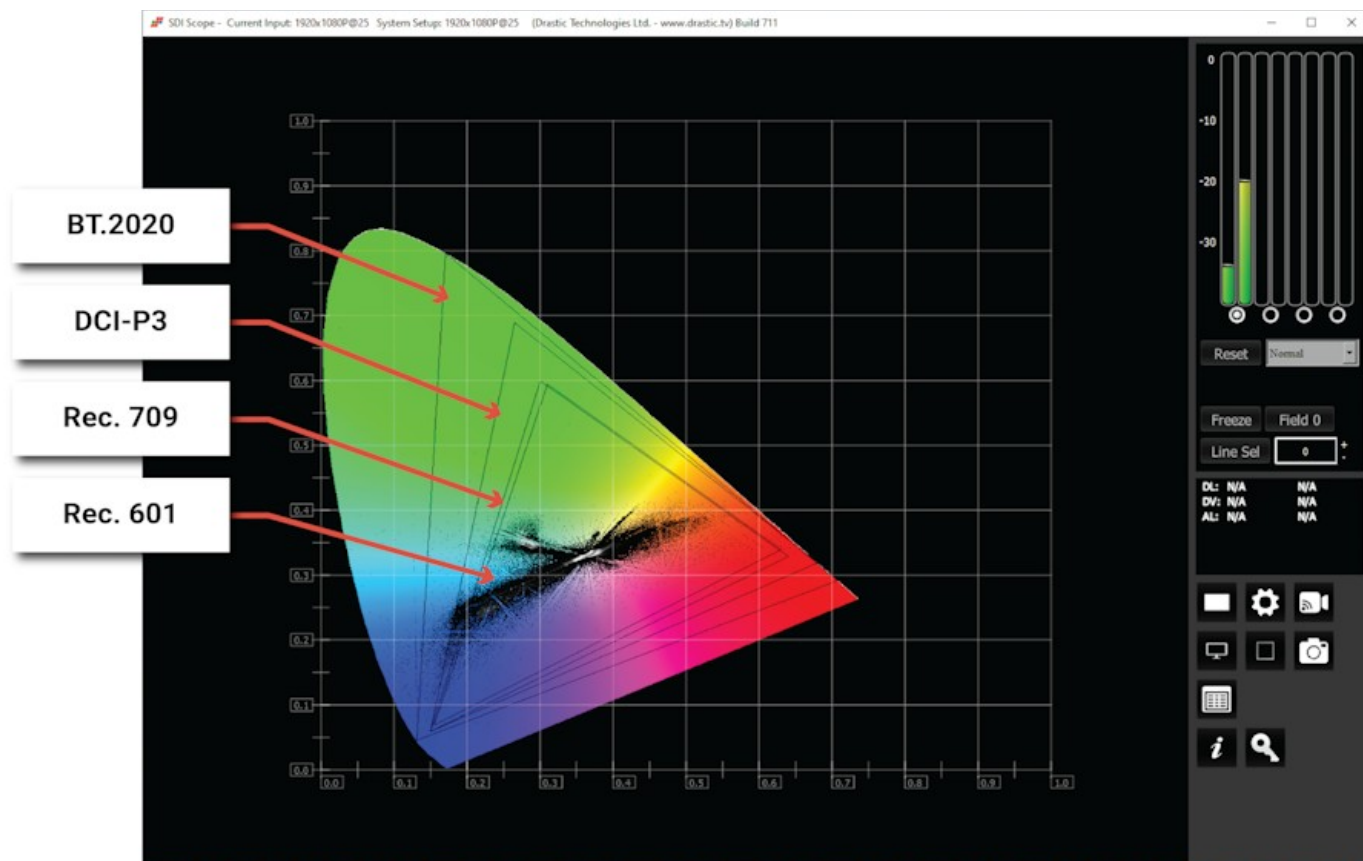


The Chromaticity scope provides a visual representation of the color in a video across all the colors of visible light. For a particular YCbCr range (BT.2020, P3, Rec.709, CCIR-601) a triangle can be superimposed. This will delineate the colors that fall within the acceptable range and those that are outside it.

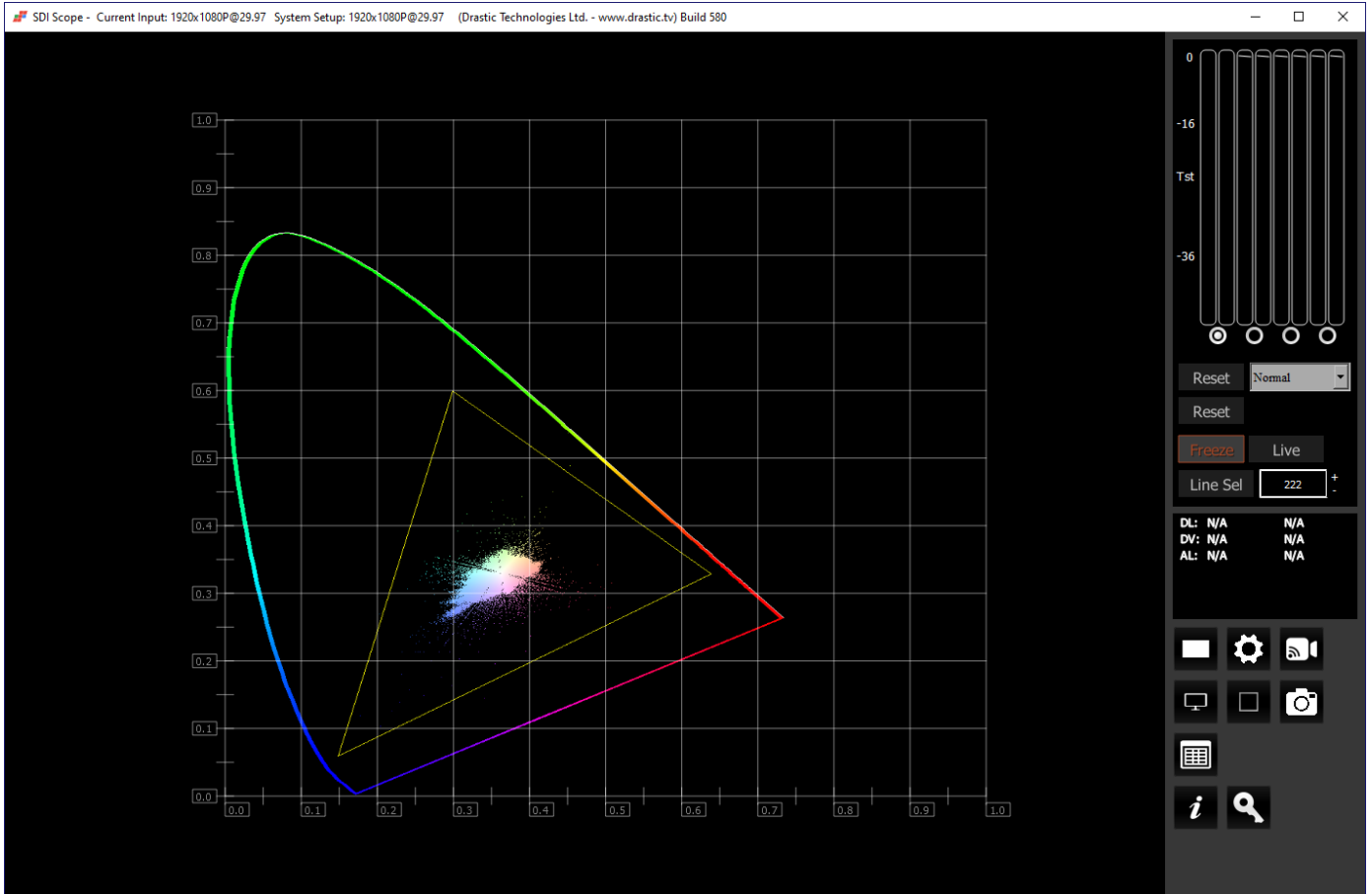


The display can also be inverted to use black as the background, and the colors to show the trace.

For a particular YCbCr range (BT.2020, P3, Rec.709, CCIR-601) a triangle can be superimposed.



This will delineate the colors that fall within the acceptable range and those that are outside it. The color of the video within the CIE 1931 color display can be white, black, or the chromaticity hue background.

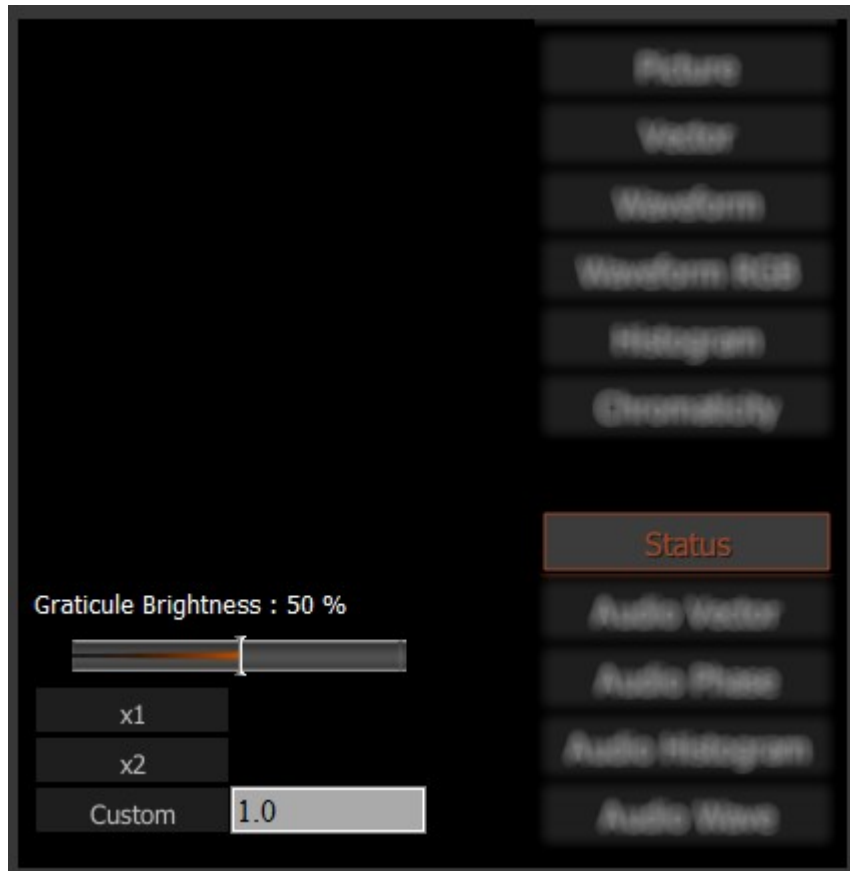


The display can also be inverted to use black as the background, and the colors to show the trace.

# Status Window

## Status Setup

To set up the Status press the **Scope Config** button. This opens the Scope Config window. Click on the **Status** button on the right. There are a number of options to set up the Status display:



**Graticule Brightness** slider – this slider is present in all of the scopes. In the Status window there is no graticule, so this slider has no effect.

**x1** button – clicking this button sets the display to standard size

**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display.

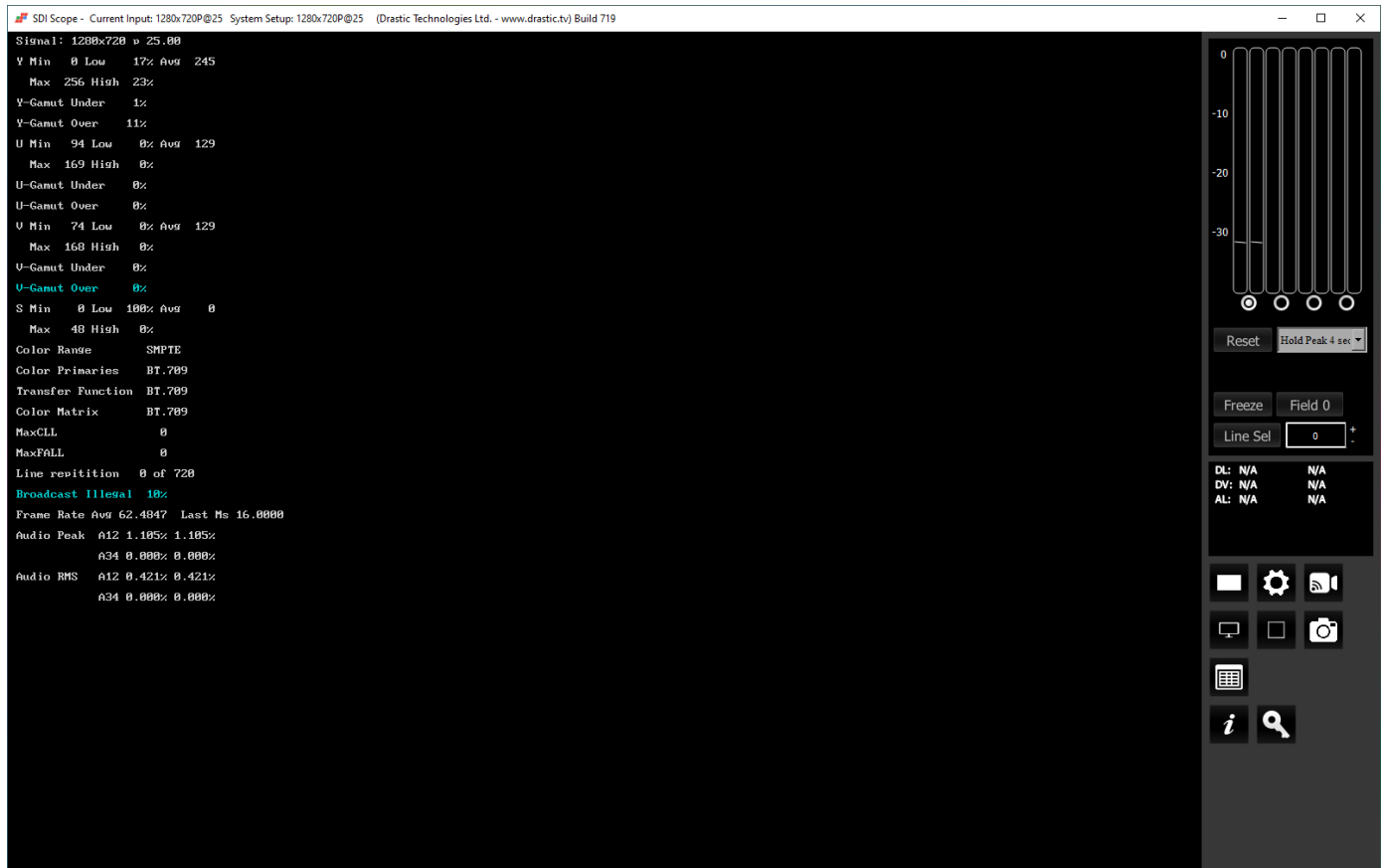
Unfortunately this may cause the Status display to drop off the screen. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Status Window

Here is the Status window.



The Status window displays:

**Signal:** displays the current signal type

**Y:** The Y component. Displays Minimum and Maximum, Low and High, Average, Gamut Under, and Gamut Over values

**U:** The U component. Displays Minimum and Maximum, Low and High, Average, Gamut Under, and Gamut Over values

**V:** The V component. Displays Minimum and Maximum, Low and High, Average, Gamut Under, and Gamut Over values

**S:** Saturation. Displays Minimum and Maximum, Low and High, Average, Gamut Under, and Gamut Over values

**Color Range:** Full or SMPTE (Limited)

**Color Primaries:** BT 709 (HD), BT 470BG (PAL), SMPTE 170M (NTSC), BT 2020 (WCG)

**Transfer Function:** BT 709 (HD), SMPTE 170M (PAL/NTSC), SMPTE 2084 (HDR10/PQ), ARIB B67 (HLG)

**Color Matrix:** BT 709 (HD), BT 479BG (PAL), BT 601 (NTSC), BT 2020 (WCG)

**MaxCLL:** In HDR10 mode, Maximum Content Light Level

**MaxFALL:** In HDR10 mode, Maximum Frame – Average Light Level

**Line repetition** in number of lines over total possible lines

**Broadcast illegal** in percentage

**Frame Rate:** Displays Average, and Last Ms.

**Audio Peak** per channel pair  
**Audio RMS** per channel pair

# Audio Vector

## Audio Vector Setup

To set up the Audio Vectorscope press the **Scope Config** button. This opens the Scope Config window. Click on the **Audio Vector** button on the right. There are a number of options to set up the Audio Vectorscope display:



- Graticule** checkbox – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.
- Lissajousxy** checkbox – when selected, displays the relative phase of the selected audio pair in Lissajous XY mode, where the audio signal's axis is the center vertical line, middle point.
- Lissajous** checkbox – when selected, displays the relative phase of the selected audio pair in Lissajous mode, where the audio signal's axis is the line from the lower left to the upper right, middle point.
- Polar** checkbox – when selected, displays the relative phase of the selected audio pair in Polar mode, where the signal's axis is the center vertical line, bottom point.
- Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.
- x1** button – clicking this button sets the display to standard size
- x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.
- Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

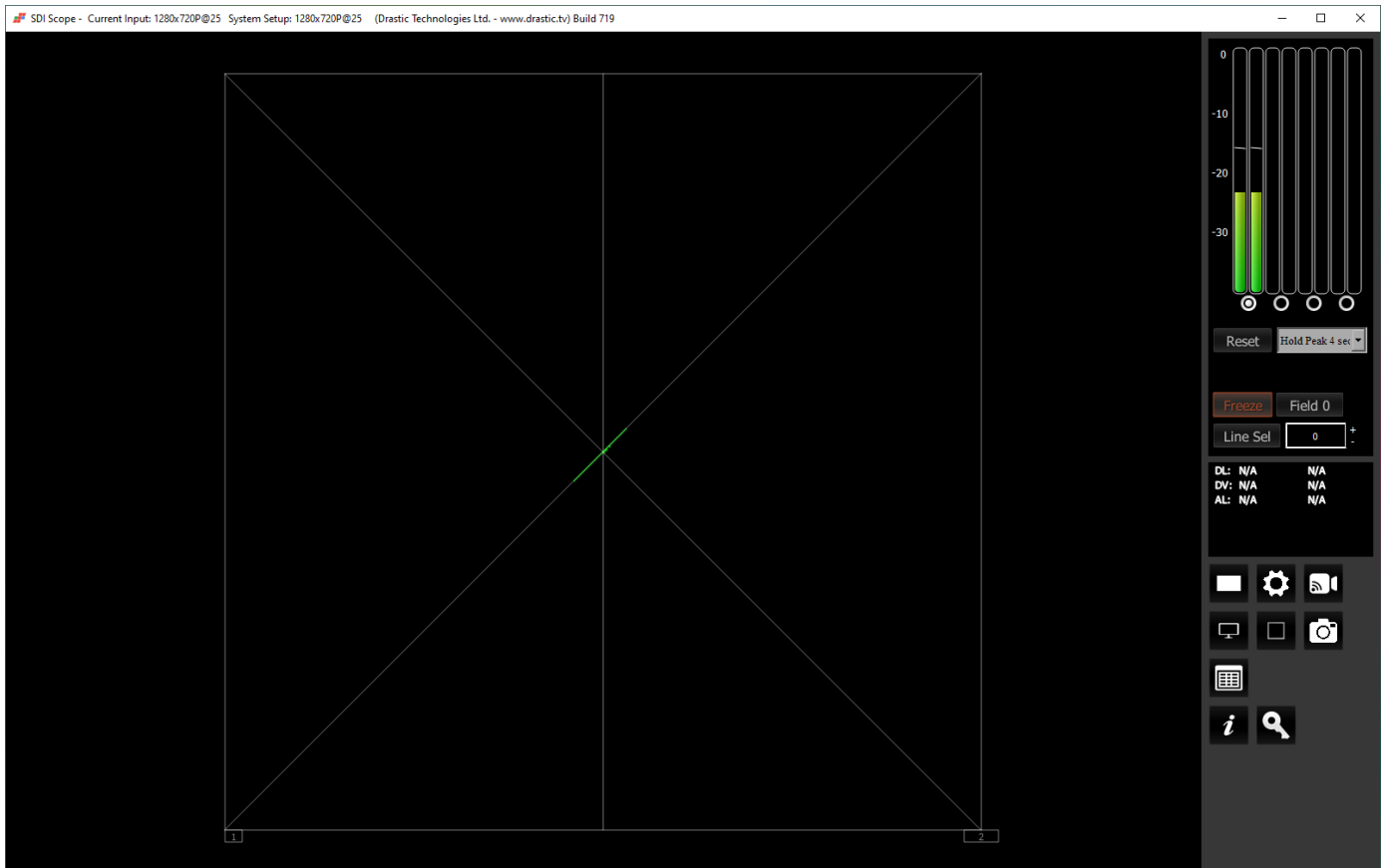


Pressing the x in the upper right corner will close the Scope Config window.

## Audio Vector Window

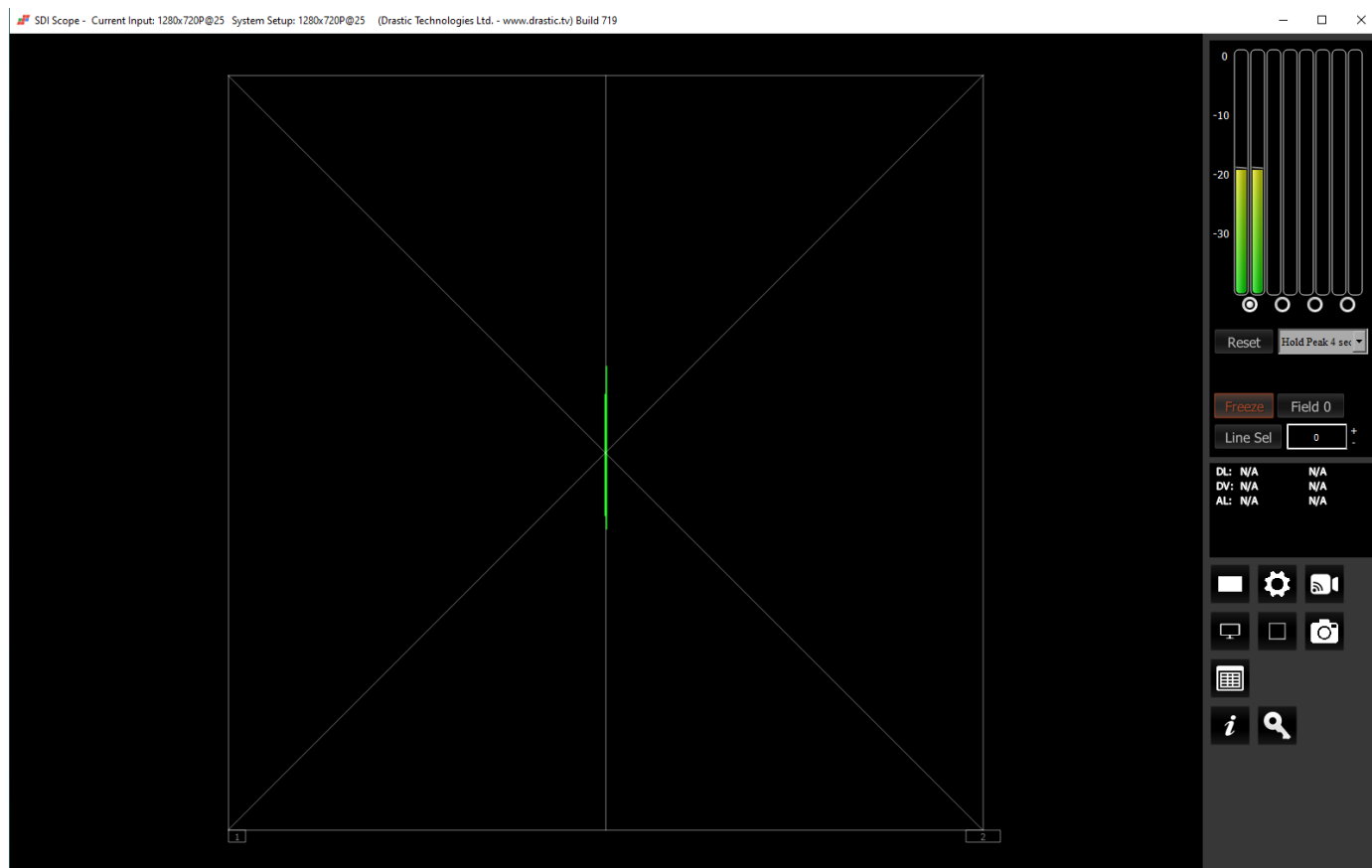
There are 3 types of audio vectorscope displays available.

### Lissajous XY mode



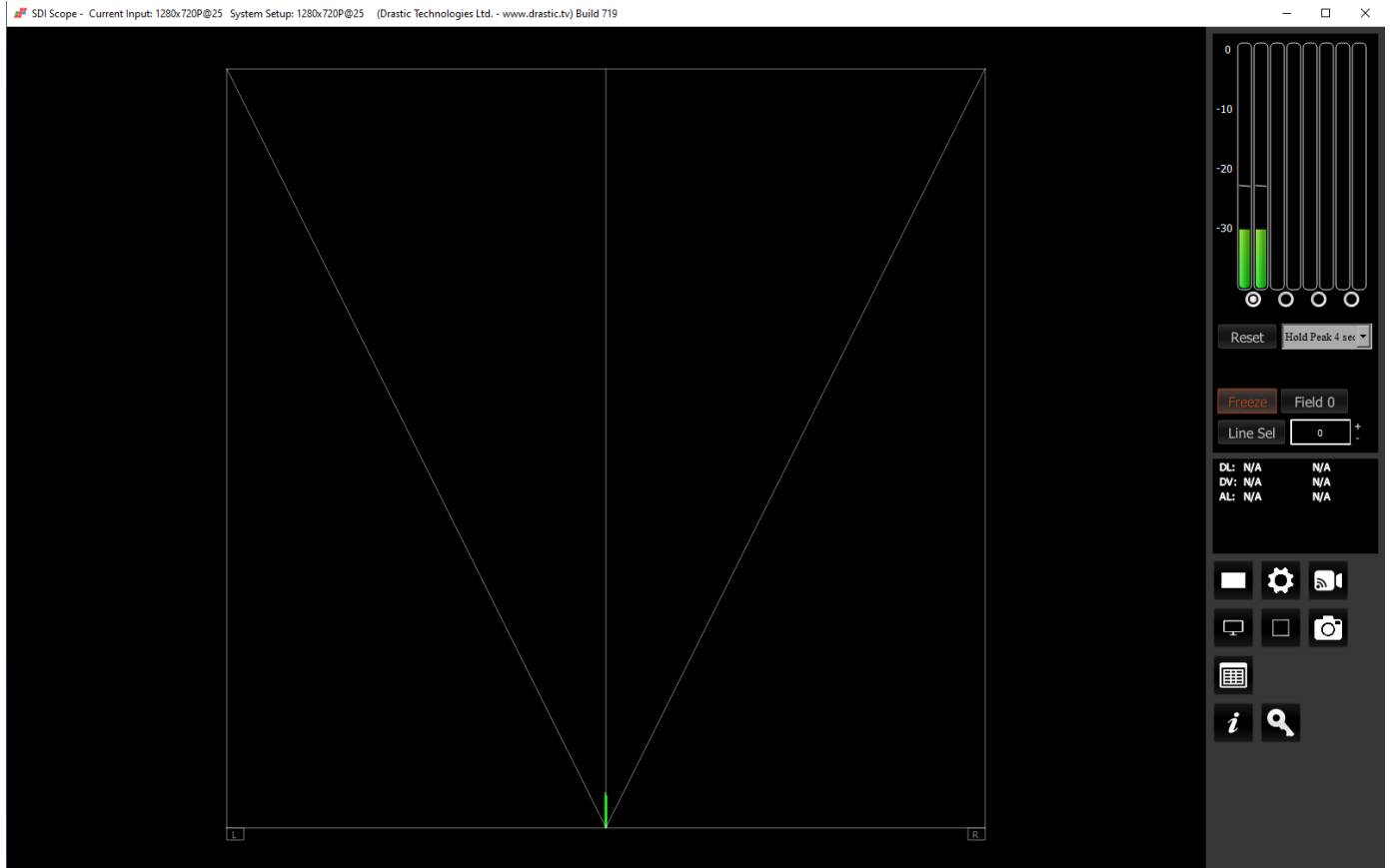
Lissajous XY mode centers the two audio channels along the X-Y axis (from the lower left corner to the upper right corner), and shows any difference between the channels as moving closer to vertical (left channel has more signal) or closer to horizontal (right channel has more signal).

## Lissajous mode



Lissajous mode centers the two audio channels along the vertical axis, and shows any difference between the channels as either angled to the left (left channel has more signal) or angled to the right (right channel has more signal).

## Polar mode



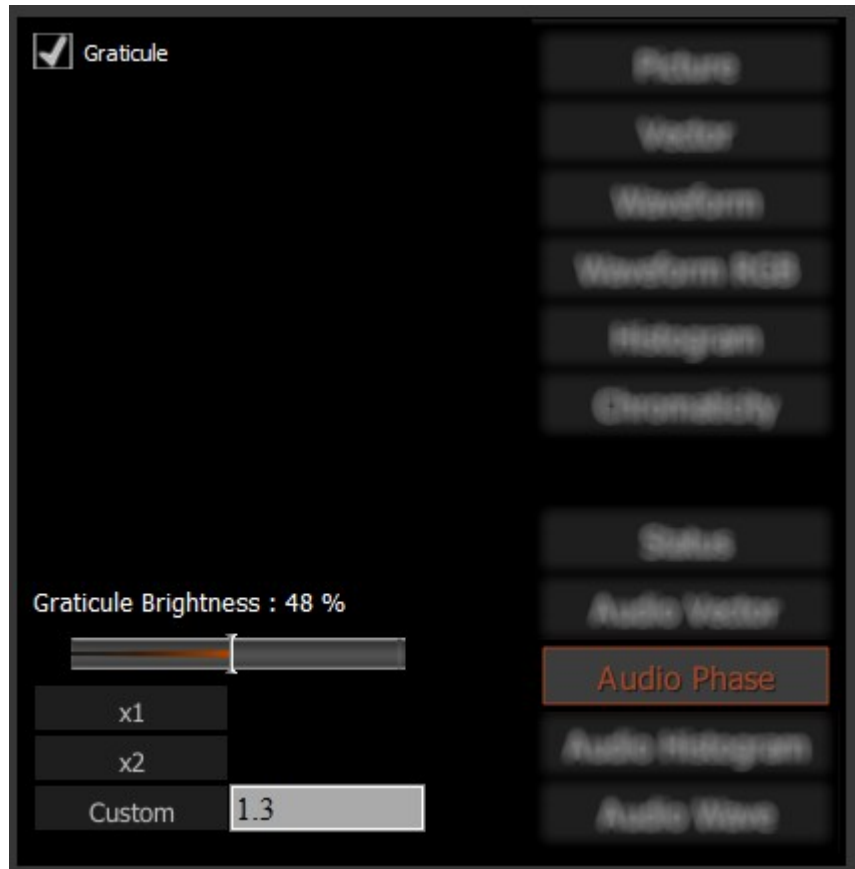
Polar mode centers the two audio channels along the vertical axis starting at the bottom center, and shows any difference between the channels as either angled to the left (left channel has more signal) or angled to the right (right channel has more signal).

The audio vectorscope measures the difference between channels of a stereo pair. One channel drives the horizontal and the other the vertical deflection. This will show the relative phase of the two channels. This can be shown in Lissajous XY, Lissajous or Polar modes. The pair being monitored can be changed using the radio buttons under the audio meters at the top right.

# Audio Phase

## Audio Phase Setup

To set up the Audio Phase press the **Scope Config** button. This opens the Scope Config window. Click on the **Audio Phase** button on the right. There are a number of options to set up the Audio Phase display:



**Graticule** checkbox – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Audio Phase Window

Here is the Audio Phase window.



The audio phase meter shows the relative density of the first two audio channels and the relative loudness as a line moving towards the louder channel.

# Audio Histogram

## Audio Histogram Setup

To set up the Audio Histogram press the **Scope Config** button. This opens the Scope Config window. Click on the **Audio Histogram** button on the right. There are a number of options to set up the Audio Histogram display:



**Graticule** checkbox – when selected, the graticule is laid over the Audio Histogram display. In this case, it is simply the outline around the area in which the traces is displayed. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Amp Linear** selector – clicking in the Amp Linear checkbox sets the Amp to linear

**Amp Log** selector – clicking in the Amp Log checkbox sets the Amp to logarithmic

**Scale Linear** – clicking in the Scale Linear checkbox sets the scale to linear.

**Scale Sqrt** – clicking in the Scale Sqrt checkbox sets the scale to sqrt (square root).

**Scale Cbrt** – clicking in the Scale Cbrt checkbox sets the scale to cbrt (cubed root).

**Scale Log** – clicking in the Scale Log checkbox sets the scale to logarithmic.

**Scale RLog** – clicking in the Scale RLog checkbox sets the scale to R logarithmic (reverse logarithmic).

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal displ. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.



## Audio Histogram Window

Here is the Audio Histogram window.

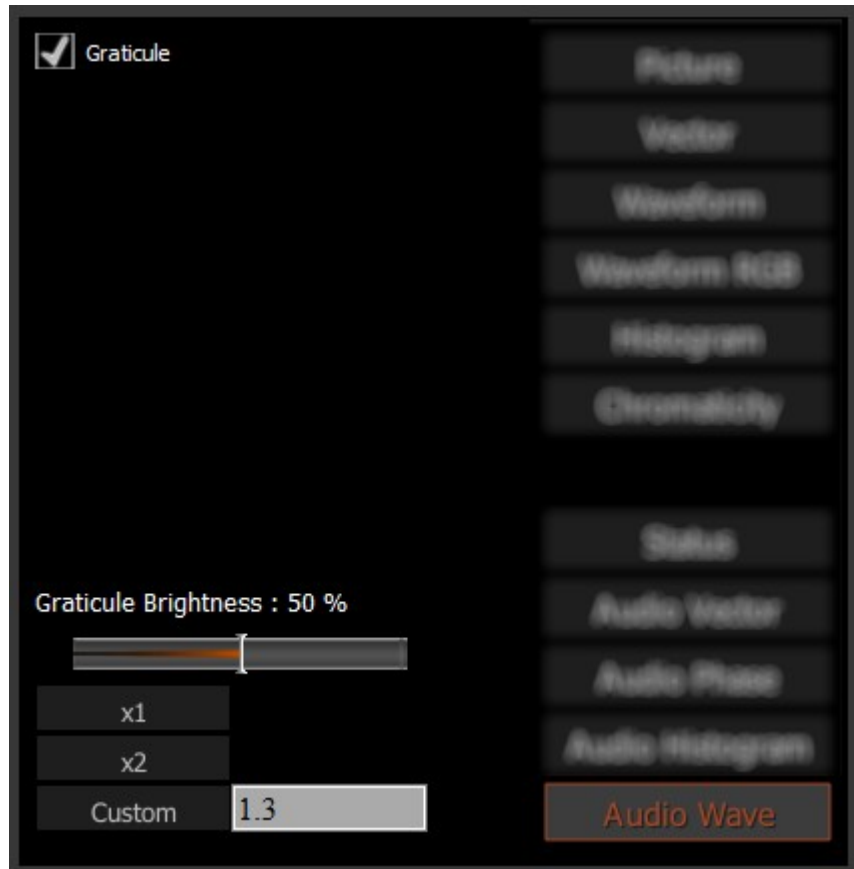


The audio histogram displays a bar chart of the levels of the components of an audio signal. This can be displayed as linear or logarithmic. The scale can be set as linear, square root, cubed root, log or reverse log.

# Audio Wave

## Audio Wave Setup

To set up the Audio Wave press the **Scope Config** button. This opens the Scope Config window. Click on the **Audio Wave** button on the right. There are a number of options to set up the Audio Wave display:



**Graticule** checkbox – when selected, the graticule is laid over the Histogram display. The brightness of the Graticule may be adjusted using the **Graticule Brightness** slider described below.

**Graticule Brightness** slider – moving the Graticule Brightness slider adjusts the brightness of the graticule overlay, 0% providing no display and 100% being maximum brightness.

**x1** button – clicking this button sets the display to standard size

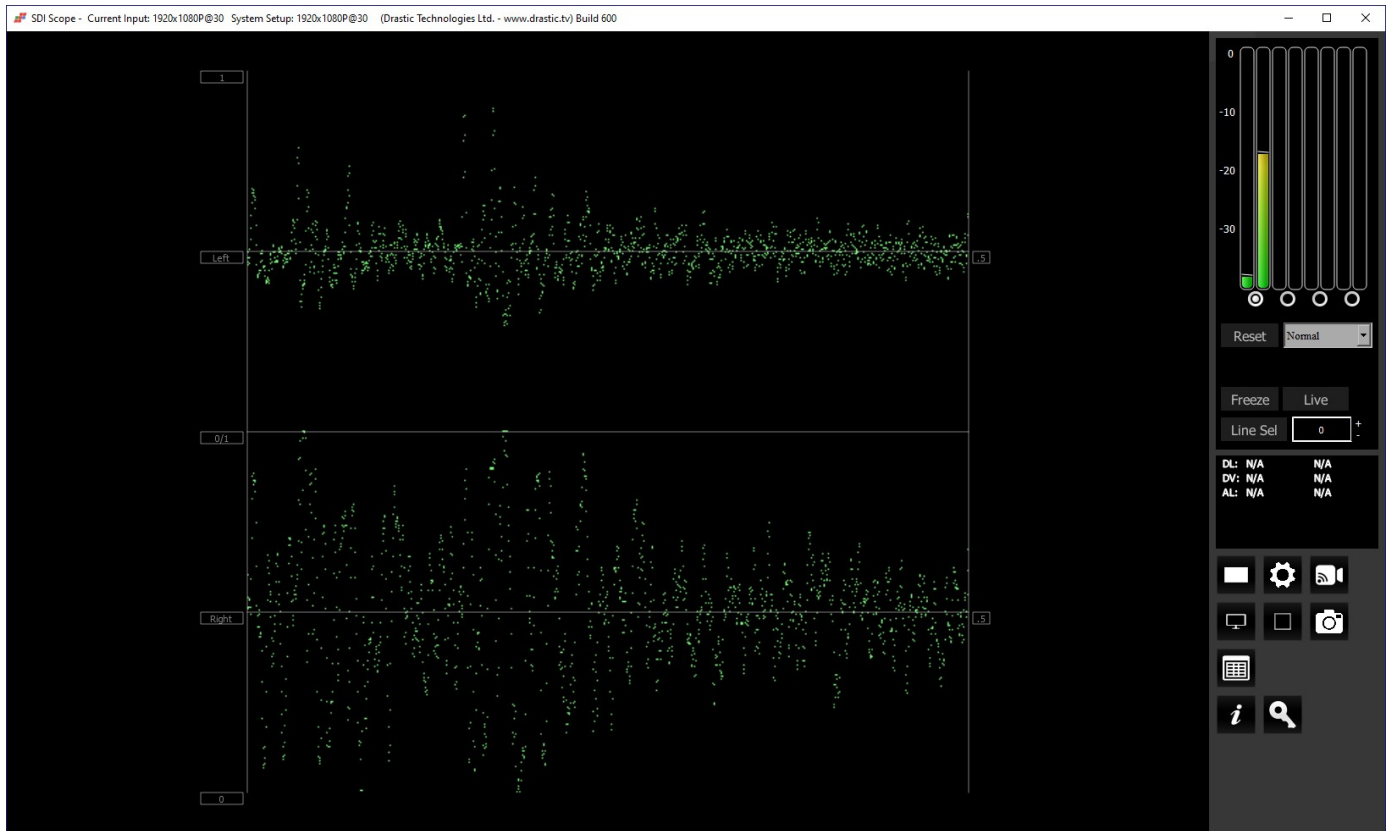
**x2** button – clicking this display zooms in to set the display at 200%, or 2x normal display. Pressing the x1 button sets the display back to normal.

**Custom** button and field – The user may enter a custom enlargement value in the field, and press the Custom button to zoom in and see details up close. Pressing the x1 button sets the display back to normal.

Pressing the x in the upper right corner will close the Scope Config window.

## Audio Wave Window

Here is the Audio Wave window.



The audio waveform of the first pair of audio channels can be displayed.

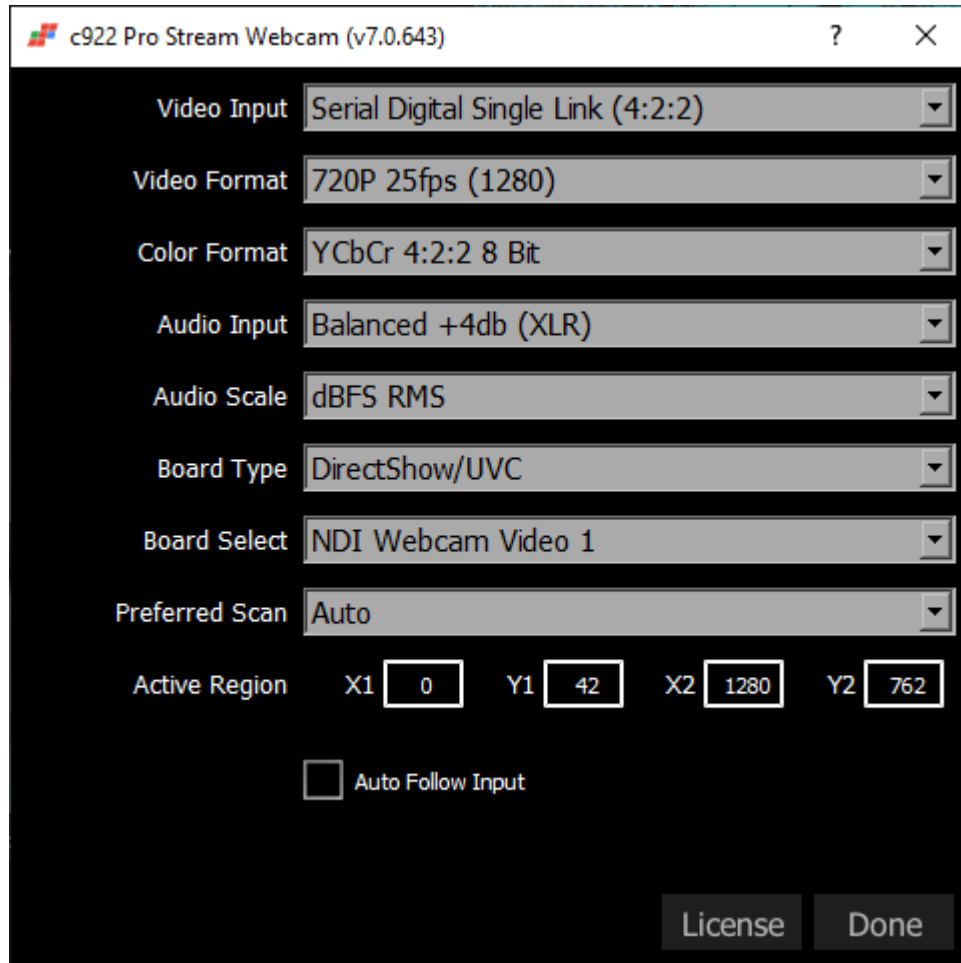
# System Configuration



System Configuration

**System Configuration** button – Opens the System Configuration window, which allows the user to adjust settings for the video and audio I/O type, and to license the software.

Here is a look at the options in the System Configuration window.

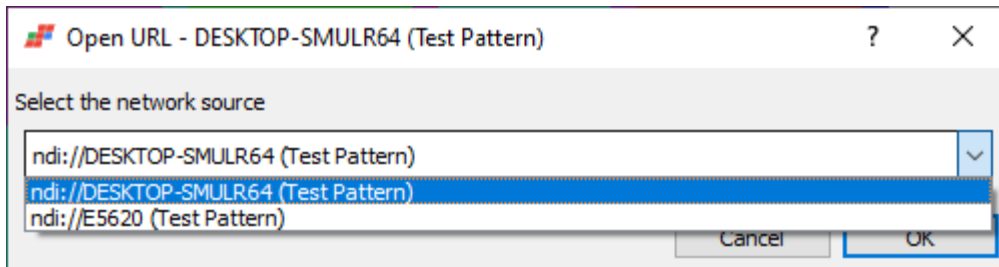


## IP Setup

When set to an NDI input, there will be an IP Video Setup button at the top of the System Configuration window.

IP Video Setup

**IP Setup** button – opens the Open URL window, which allows the user to select between available NDI stream inputs. The list will be populated with the most recent sources that have been selected.



## Video Input

**Video Input** pulldown menu – allows the user to select between SDI and HDMI inputs. The user will be presented with a list similar to this:

- Serial Digital Single Link (4:2:2)
- Serial Digital + Alpha (4:2:2:4)
- Serial Digital Dual Link (4:4:4:4)
- HDMI – Auto YCbCr/RGB

## Video Format

**Video Format** pulldown menu - allows the user to select between available SD and HD formats. The user will be presented with a list similar to this:

- NTSC CCIR-601
- 1080i 30/60fps (1920)
- 1080i 29.97/59.94fps (1920)
- 1080i 25/50fps (1920)
- 1080i 24fps (1920)
- 1080i 23.98fps (1920)
- 1080sf 30/60fps (1920)
- 1080sf 29.97/59.94fps (1920)
- 1080sf 25/50fps (1920)
- 1080sf 24 (1920)
- 1080sf 23.98 (1920)
- 1080P 60fps (1920)
- 1080P 59.94fps (1920)
- 1080P 50fps (1920)
- 1080P 48fps (1920)
- 1080P@60 3G-A (1920)
- 1080P@59.94 3G-A (1920)
- 1080P@50 3G-A (1920)

- 1080P@30 3G-B Dual Link 1920x1080
- 1080P@29.97 3G-B Dual Link 1920x1080
- 1080P@25 3G-B Dual Link 1920x1080
- 1080P@48 3G-B Dual 1920x1080
- 1080P@47.95 3G-B Dual 1920x1080
- 1080P 30fps (1920)
- 1080P 29.97fps (1920)
- 1080P 25fps (1920)
- 1080P 24fps (1920)
- 1080P 23.98fps (1920)
- 720P 50fps (1280)
- 720P 60fps (1280)
- 720P 59.94fps (1280)
- 720P 25fps (1280)
- 720P 30fps (1280)
- 720P 29.97fps (1280)

## Color Format

**Color Format** pulldown menu - allows the user to select the processing mode. In the case of single link, this can be 8 bit YCbCr or YCbCr Alternate. There user will be presented with a list similar to this:

- YCbCr 4:2:2 8 bit
- YCbCr Alternate

## Audio Input

**Audio Input** pulldown menu – (hardware dependent) allows the user to select between the embedded audio tracks (HD-SDI or HDMI depending on input), or the AES/EBU audio inputs. On some hardware, analog audio inputs are also available.

## Audio Scale

**Audio Scale** – select between available audio meter modes. The user will be presented with a list similar to this:

- dBFS RMS
- dBu SMPTE RP155 (+24)
- dBu EBU R86 (+18)
- dBu EBU R86 (0)

## Board Type

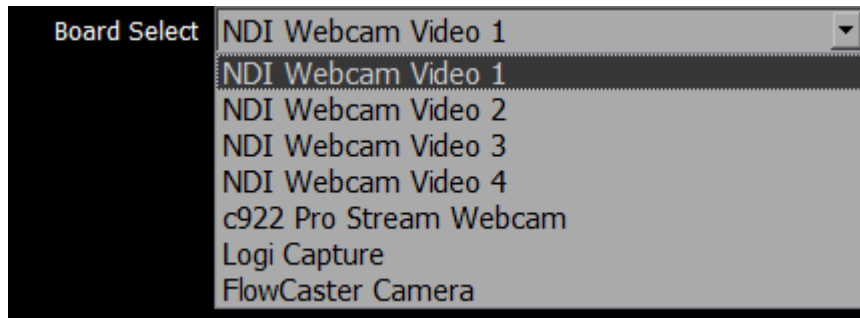
**Board Type** – select the type of board to use. The user may be presented with a list similar to this:

- Auto Select
- AJA
- Bluefish
- Blackmagic
- UltraScope
- Matrox
- DirectShow/UVC
- NDI In

- Desktop

## Board Select

**Board Select** – allows the user to select which board or screen to use. Sometimes if there is more than one board in the system, the application may be looking at the wrong one. In fact, certain types of devices may appear to be out of order, depending on whether different boards have been used in the system. Clicking between boards can reset the selected board. sdiScope will take a look at how the device identifies itself and populate the list with any devices seen in the system. Here is an example:



## Preferred Scan

**Preferred Scan** – Select between available scan settings. Note that this is usually picked up when the input type is set, but it may be useful to unambiguously set the format for your workflow. The user may be presented with a list similar to this:

- Auto
- Interlaced (i)
- Segmented (psf)

## Active Region

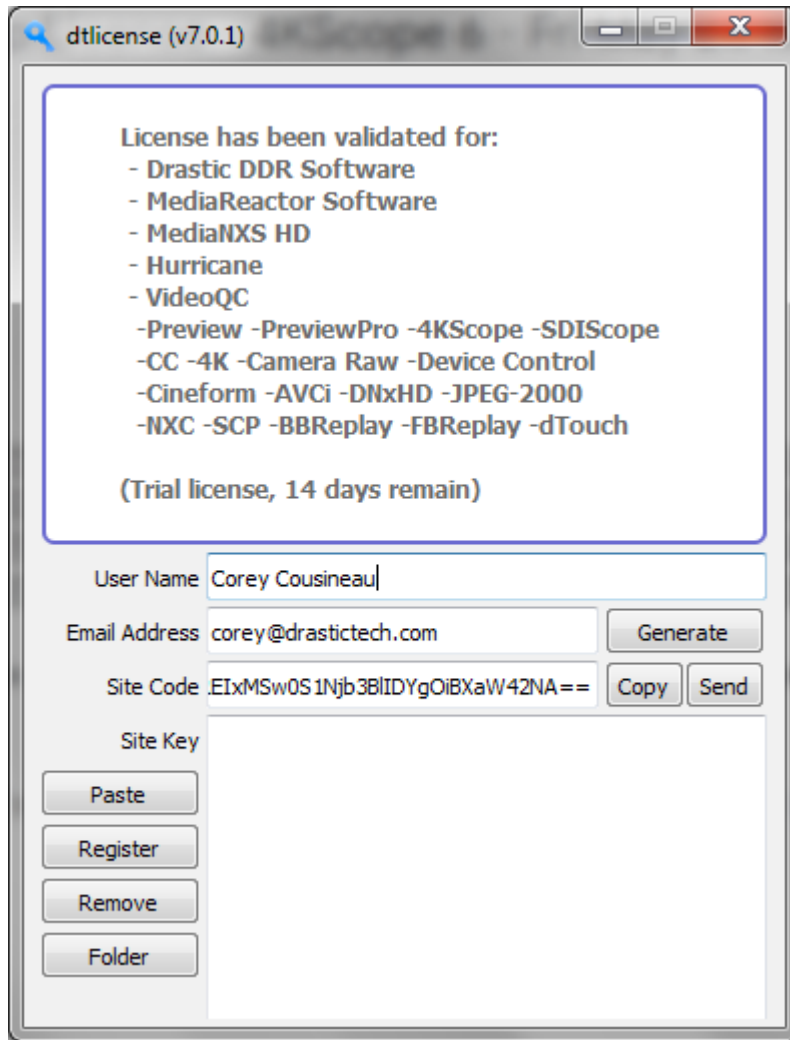
**Active Region** fields – allows the user to set the active region of the video signal to be viewed by the scopes. X1 sets the upper left pixel location, Y1 sets the lower left pixel location, X2 sets the upper right pixel location, Y2 sets the lower right pixel location.

## Auto Follow Input

**Auto Follow Input** checkbox is selected, whenever the input type is changed, the settings for sdiScope are changed as well. If not checked, switching the input signal will not switch the settings.

# License

**License** button - Press the **License** button to open the licensing dialog. Note that the license dialog may also be opened using the “key” icon on the main GUI.



The top field displays the current status of the license.

The **User Name** field allows the user to type in a first and last name during the licensing process.

The **Email Address** field allows the user to type in the email at which they would like to receive the site key for their license.

Once the name and address fields have been filled out, pressing the **Generate** button populates the **Site Code** field with a string of alphanumeric characters. This string is the Site Code.

The **Site Code** field is where the site code displayed during the licensing process. The user may select the site code and use Ctrl+C to copy it to the clipboard, or use the **Copy** button. The user will need to send the site code to Drastic Authorization to get a Site Key to enable the license.

If the system has been set up with email, pressing the **Send** button will open a new email to Drastic Authorization, with the site code in the body of the email.

Once a reply email containing the **Site Key** has been returned by Drastic Authorization, copy it, then paste it into the Site Key field either using the **Paste** button or Ctrl+V.

Once the Site Key has been pasted into the **Site Key** field, pressing the **Register** button registers the license. The system may need to be restarted for the change in license status to be updated.



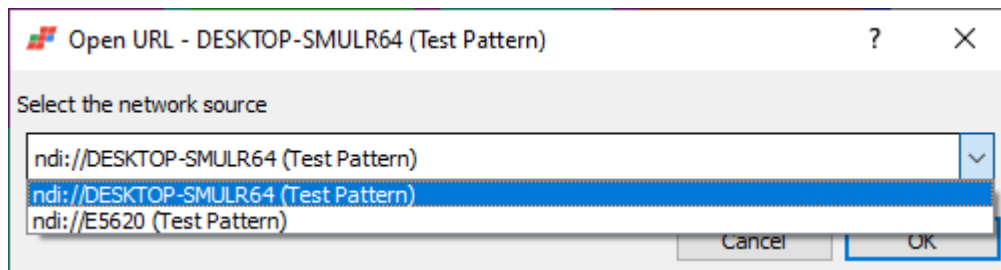
Pressing the x in the upper right corner will close the **License** window. Press the **Done** button to enable any changes, and close the **Settings** window.

**Done** button. Pressing the Done button in the System Configuration window closes the window and enables any changes that have been made.

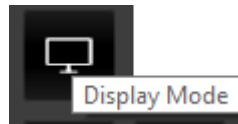
## IP Setup



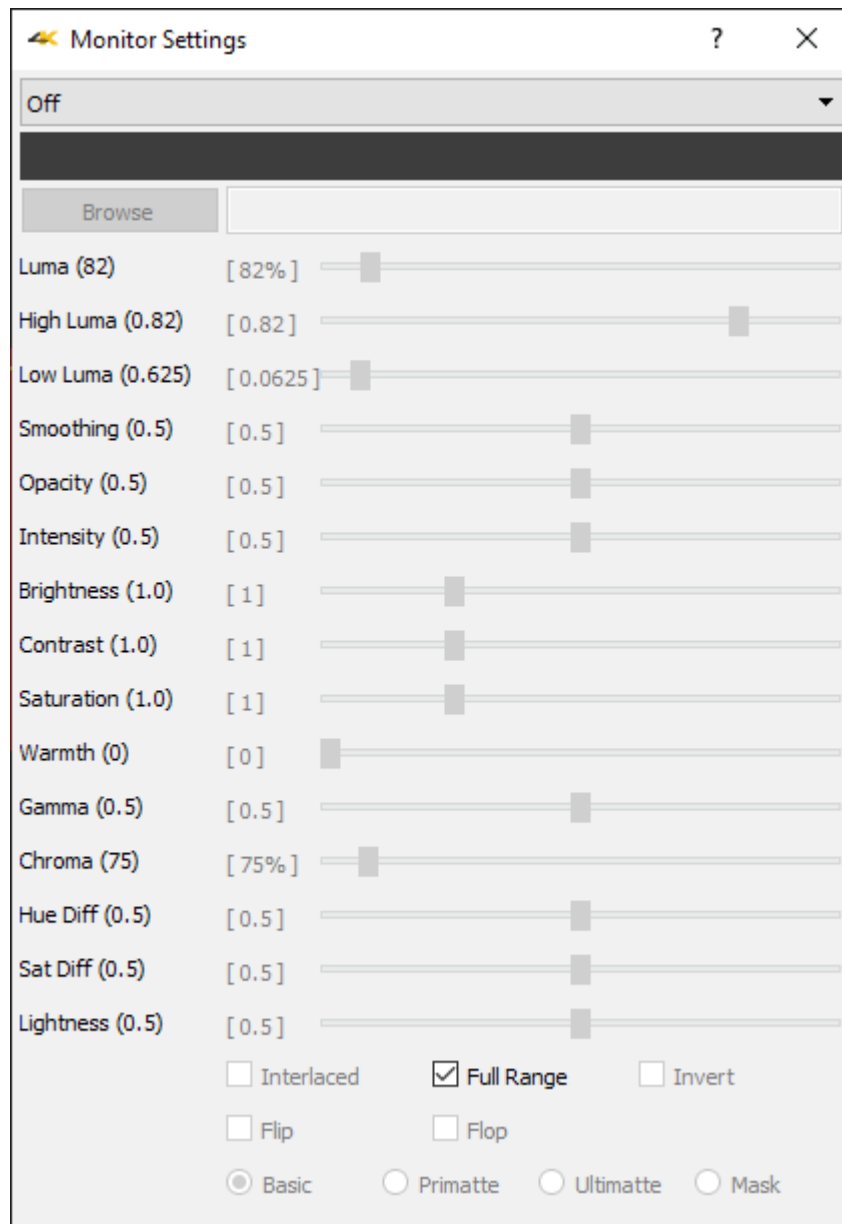
**IP Setup** button – opens the Open URL window, which allows the user to select between available IP sources. sdiScope supports NDI stream inputs. The list will be populated with the most recent sources that have been selected.



# Display Modes



**Display Mode** button – opens the Monitor Settings window, which allows the user to select between available display modes.



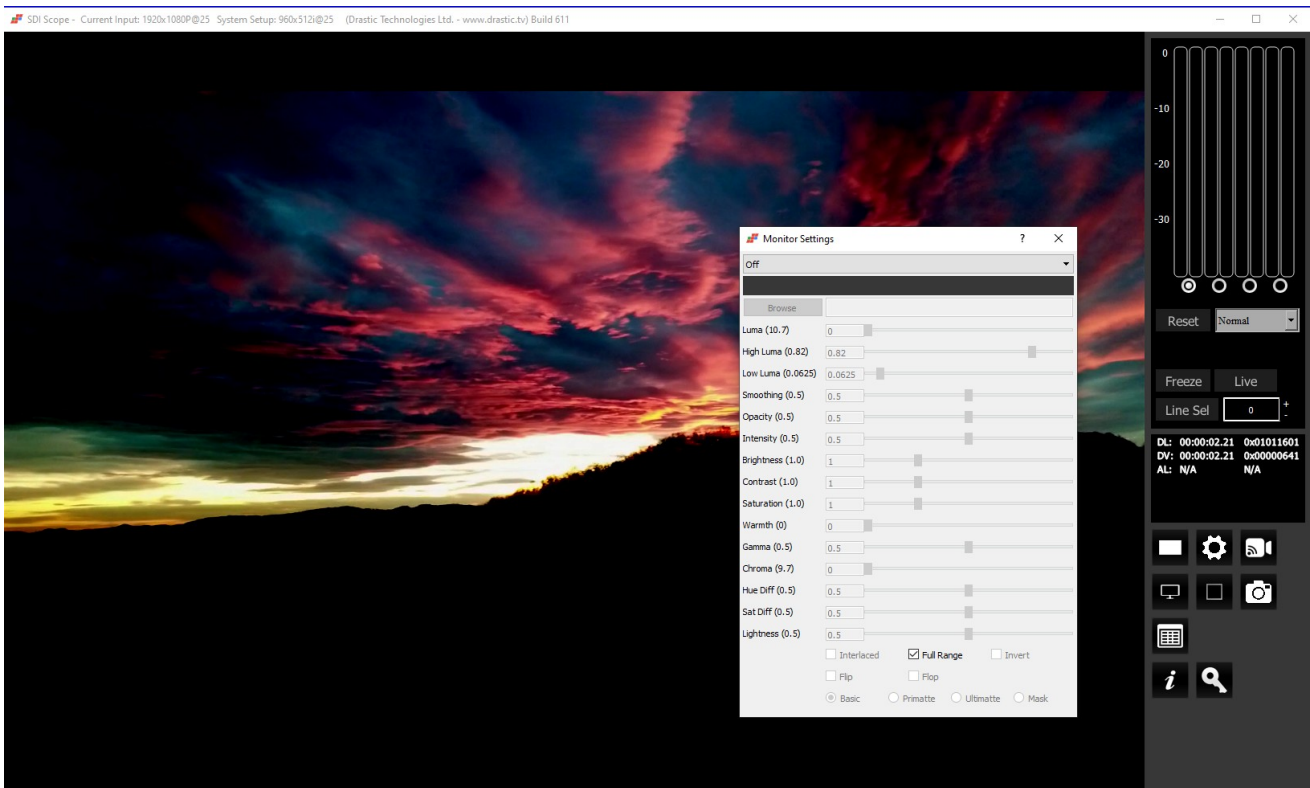
*Monitor Settings window*

The pulldown menu at the top allows the user to select between various display modes.

Display modes include:

# Off

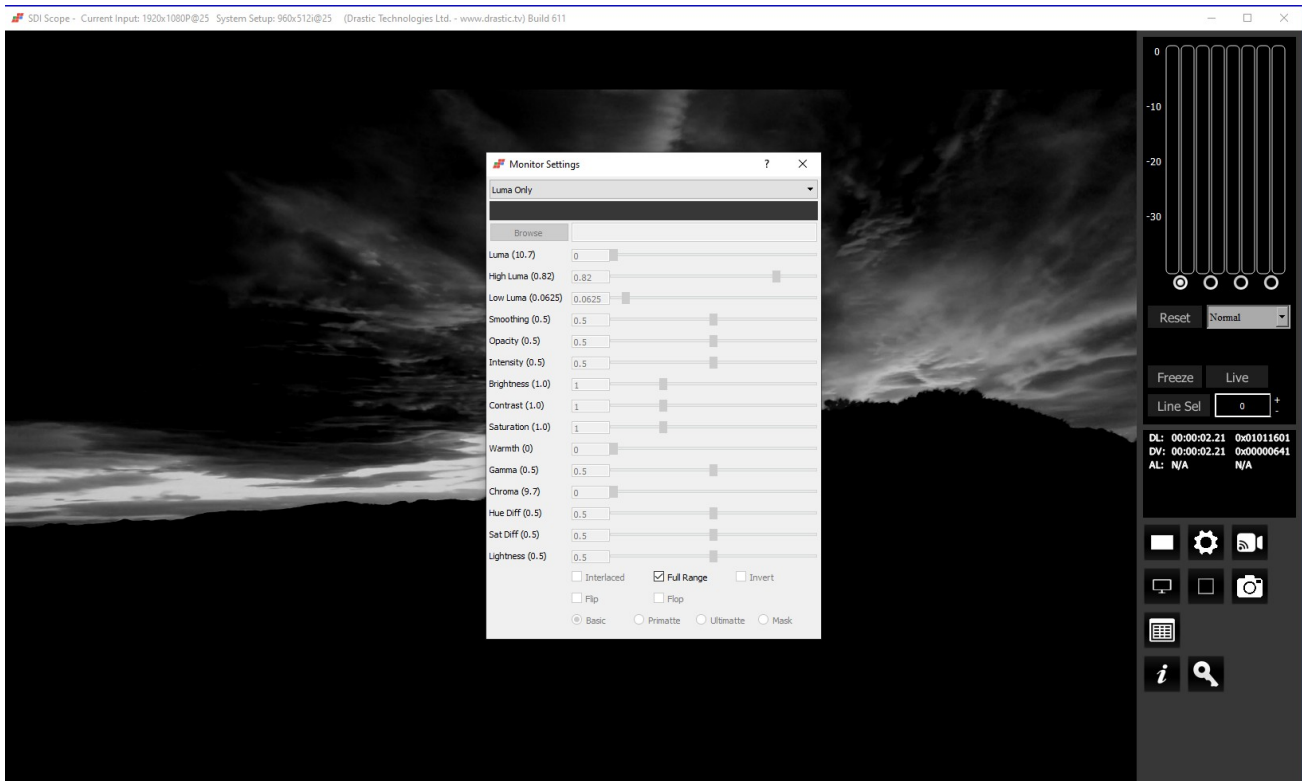
Display the signal normally. This is the default picture view.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Luma Only

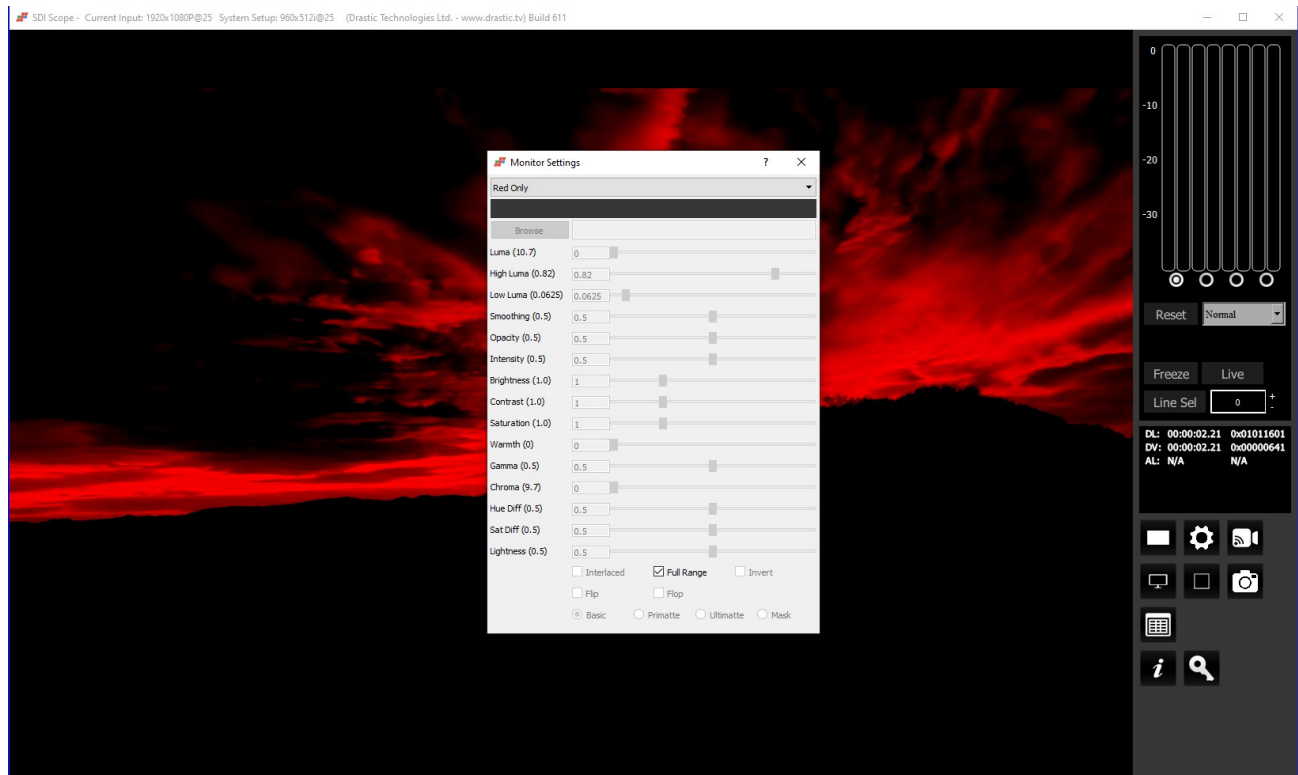
Show only the Y or brightness of the picture. This display setting produces a black and white image, with no chroma.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Red Only

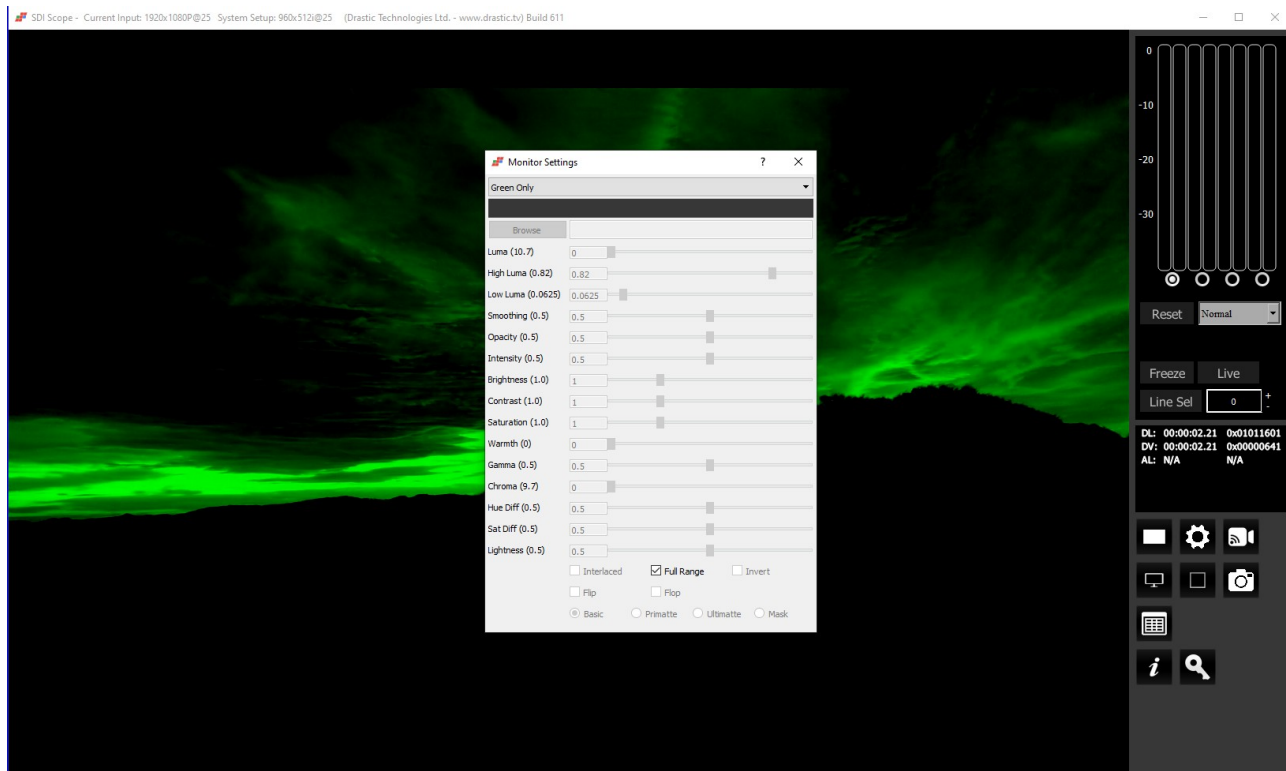
Show only the red channel.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Green Only

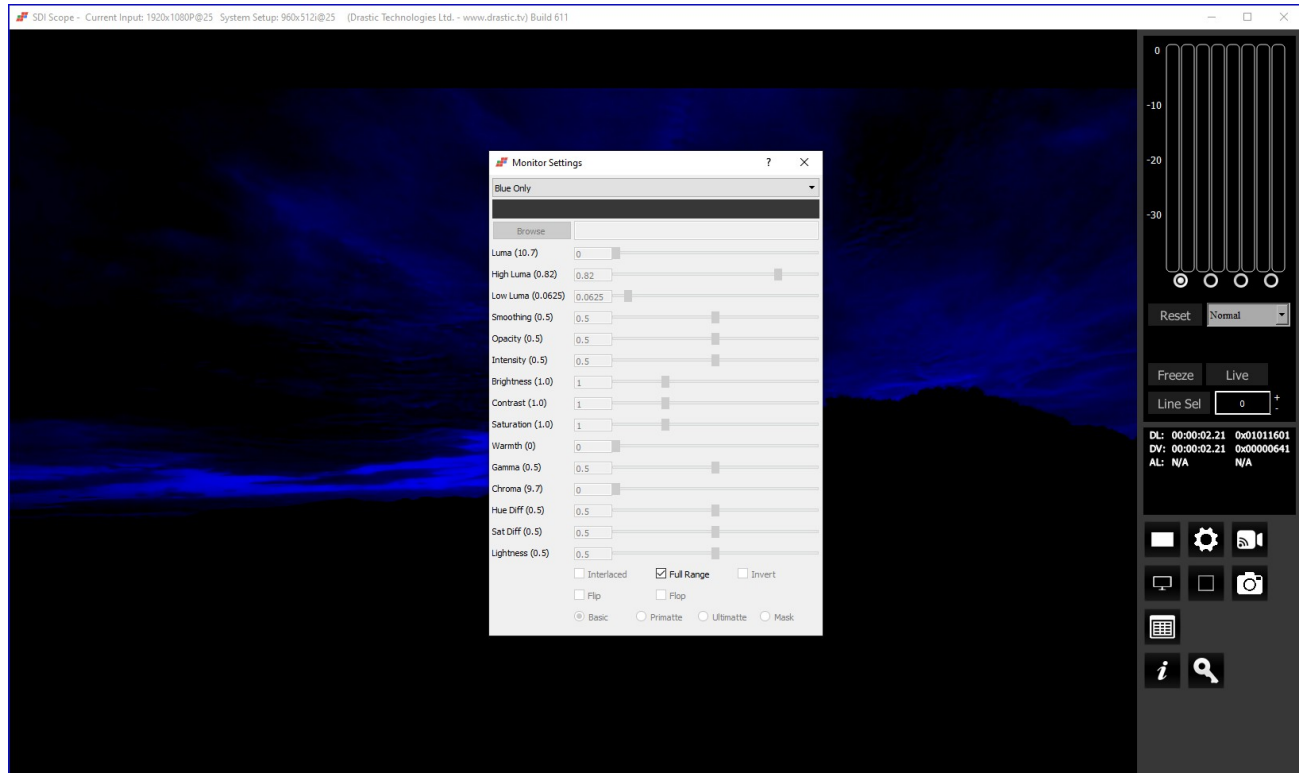
Show only the green channel.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Blue Only

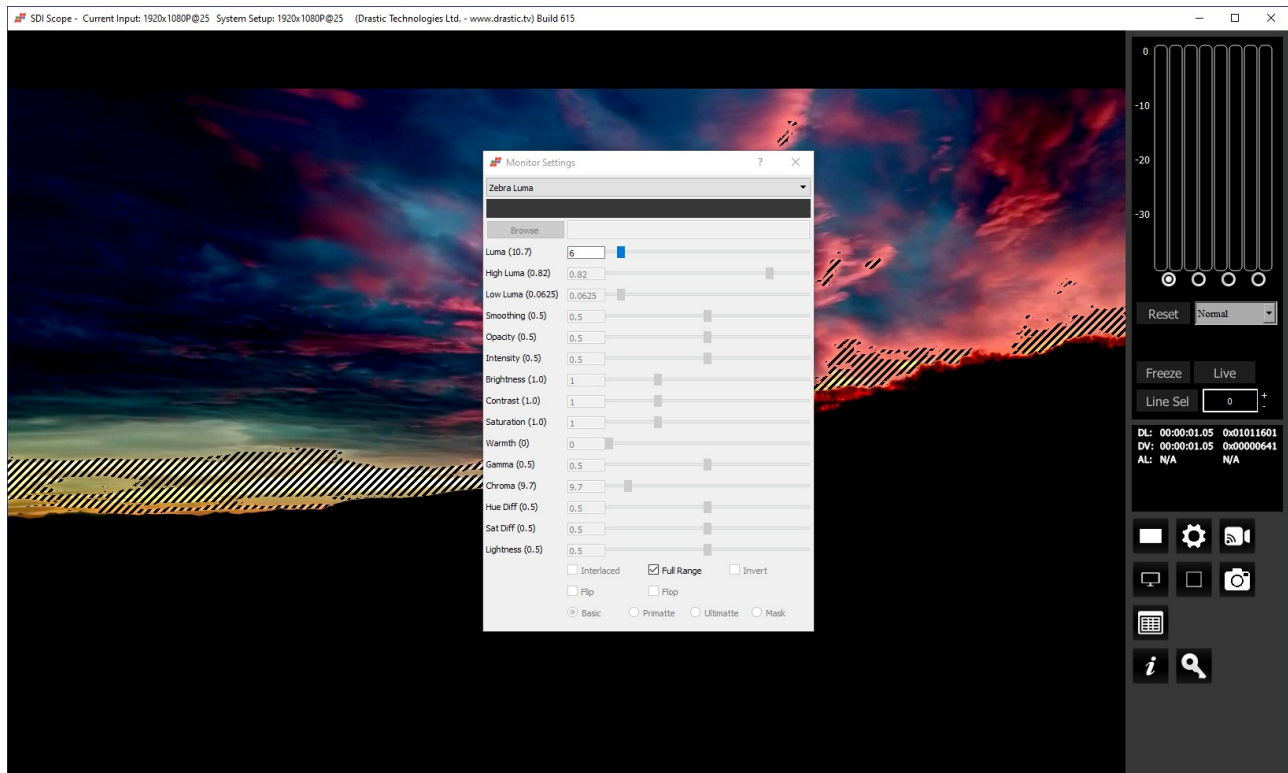
Show only the blue channel.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Zebra Luma

Draw zebra bars where the luma is too high or too low.

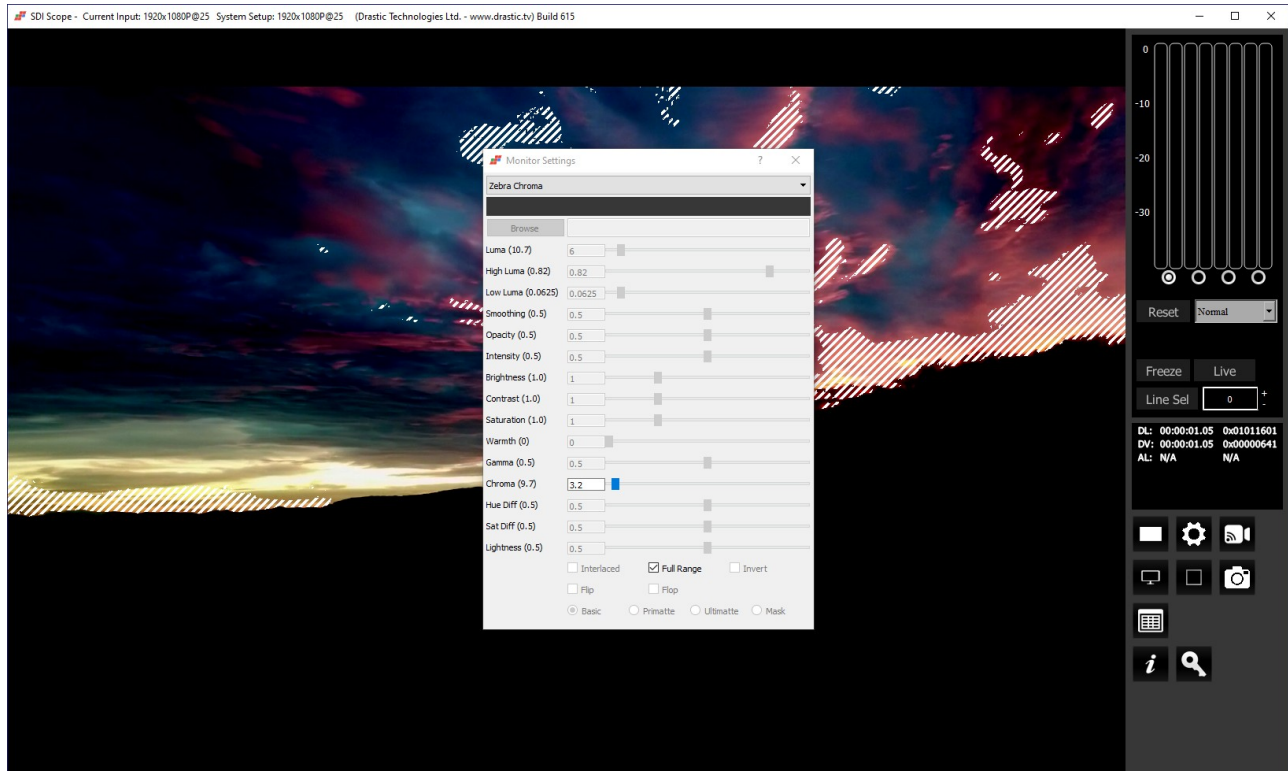


Activates the **Luma** slider, which allows the user to adjust the luma setting. When active, Luma can be adjusted by pulling the slider with the mouse, or using the left and right arrow buttons, in tenths. Click on the slider and use the < and > keys. The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.



# Zebra Chroma

Draw zebra bars where the chroma is out of range.

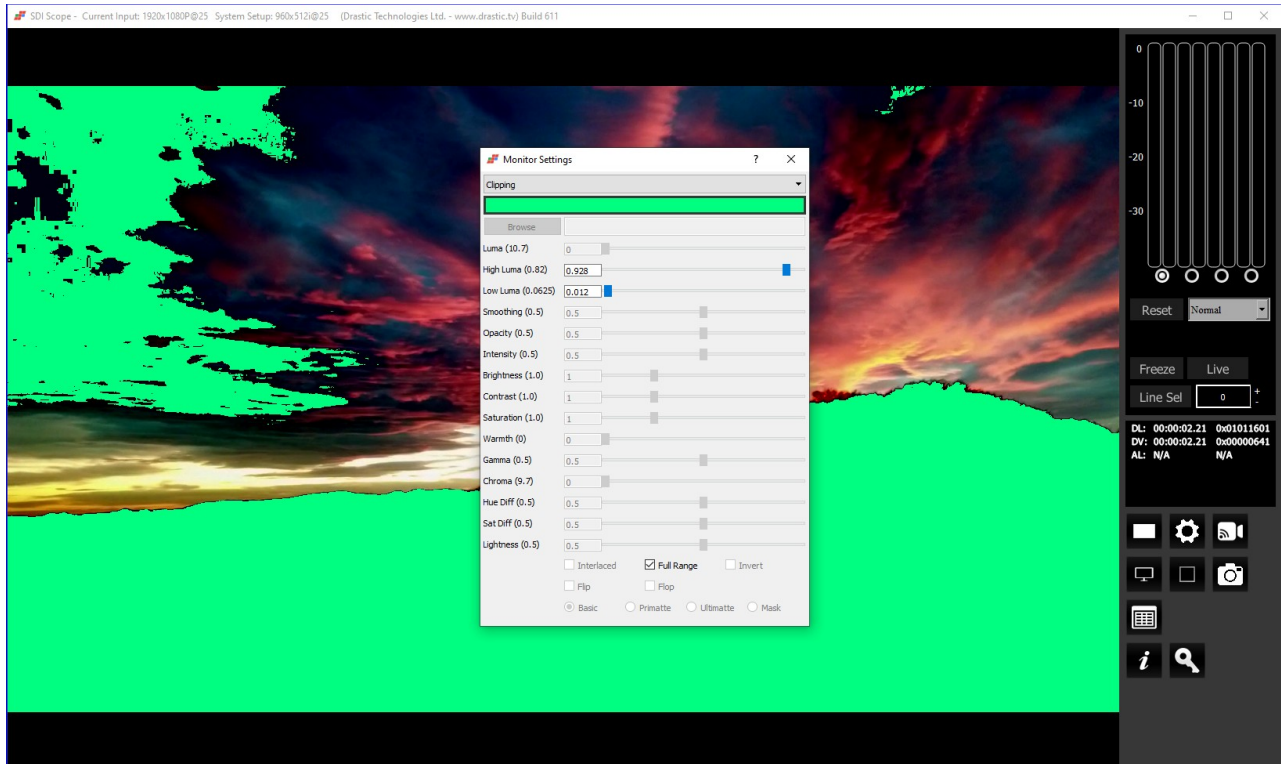


Activates the **Chroma** slider, which allows the user to adjust the chroma setting. When active, Chroma can be adjusted by pulling the slider with the mouse, or using the left and right arrow buttons, in tenths. Click on the slider and use the < and > keys.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Clipping

Draw green anywhere the signal is too low, or red anywhere it is too high. If a signal is too low, the blacks will become muddy and lose detail. If it is too high, the whites will bleach out and lose detail.



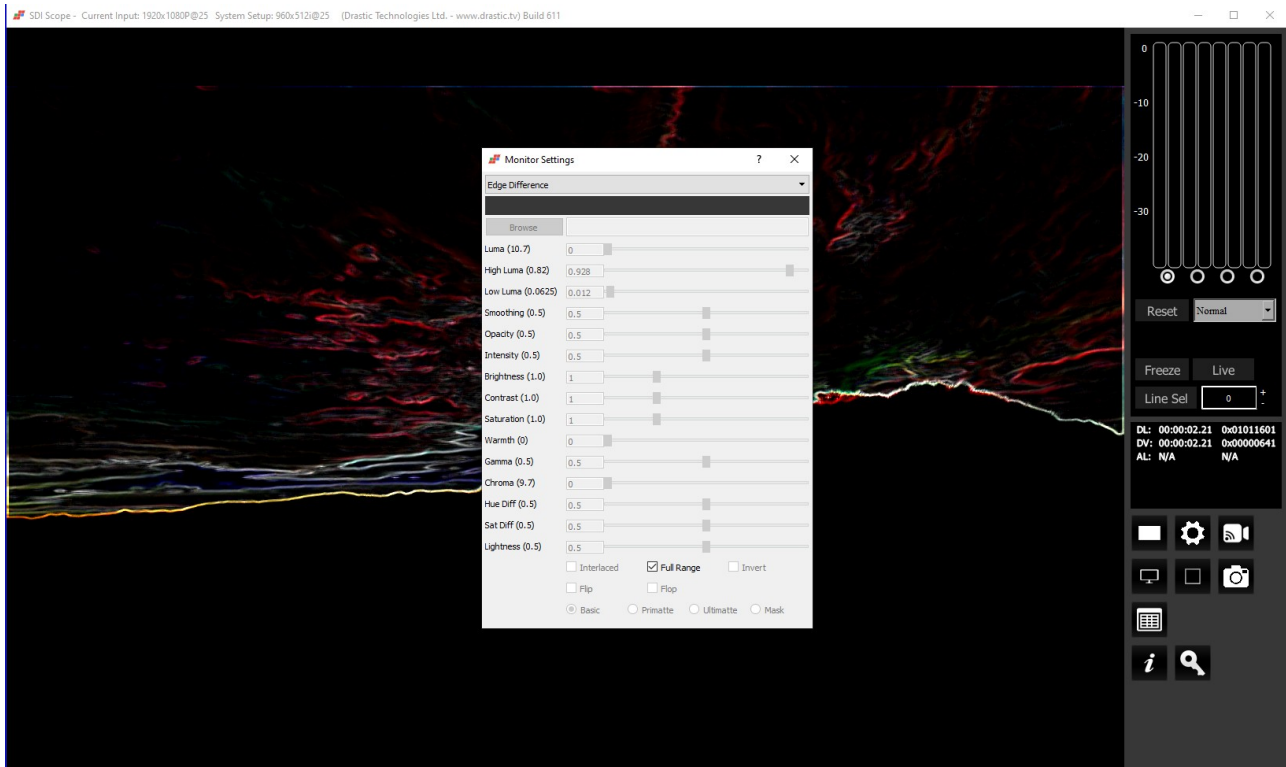
Activates the **Color Picker** (the bar just below the display mode pulldown menu), so the user can choose a primary (too low) color other than green. The secondary (too high) color is automatically generated to be a contrasting color to the primary color. To open the color picker, click on the bar, or press <ENTER>.

Activates the **High Luma** slider and the **Low Luma** slider, allowing the user to adjust these settings. When active, High Luma and Low Luma can be adjusted by pulling the slider with the mouse, or using the left and right arrow buttons, in thousandths. Click on the slider and use the < and > keys.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Edge Difference

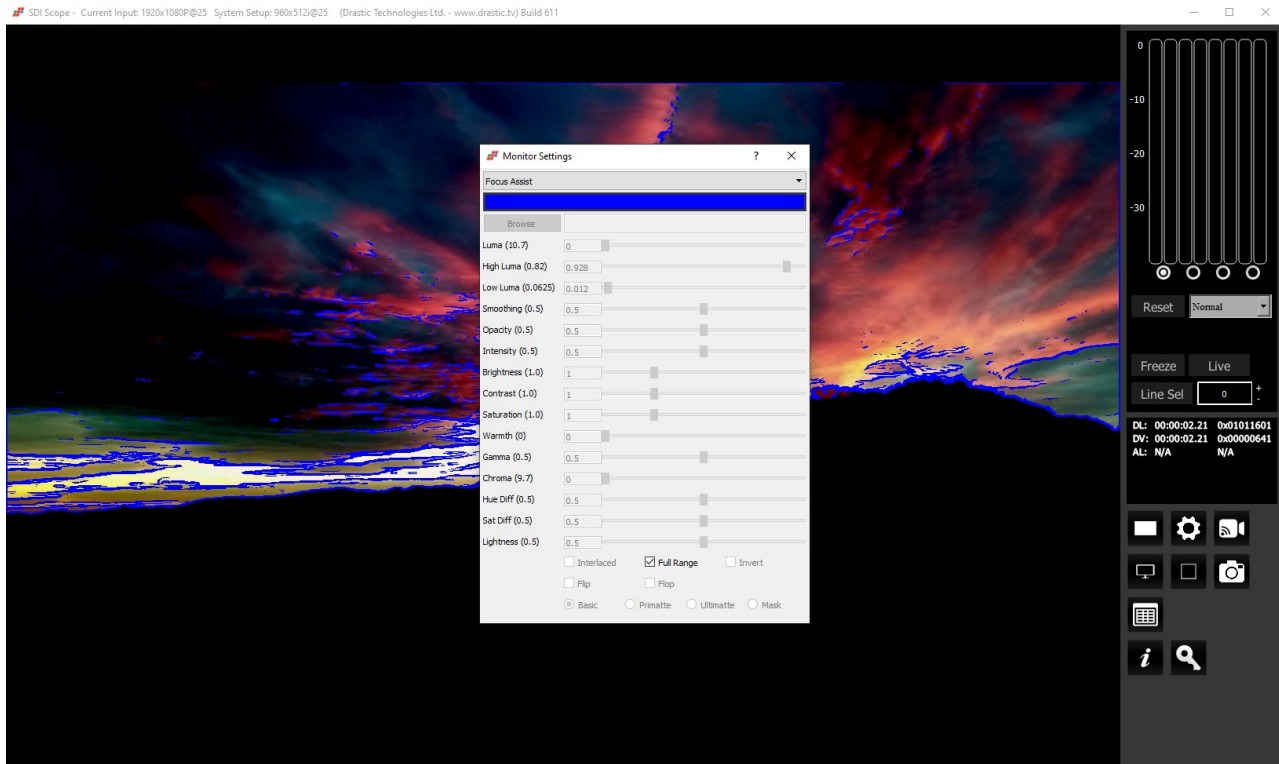
Highlight every edge in the picture, and turn the rest of the picture black.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Focus Assist

Paint areas of the image that are in focus with the selected color. This setting allows fine tuning of camera focus settings by making the in-focus areas obvious.

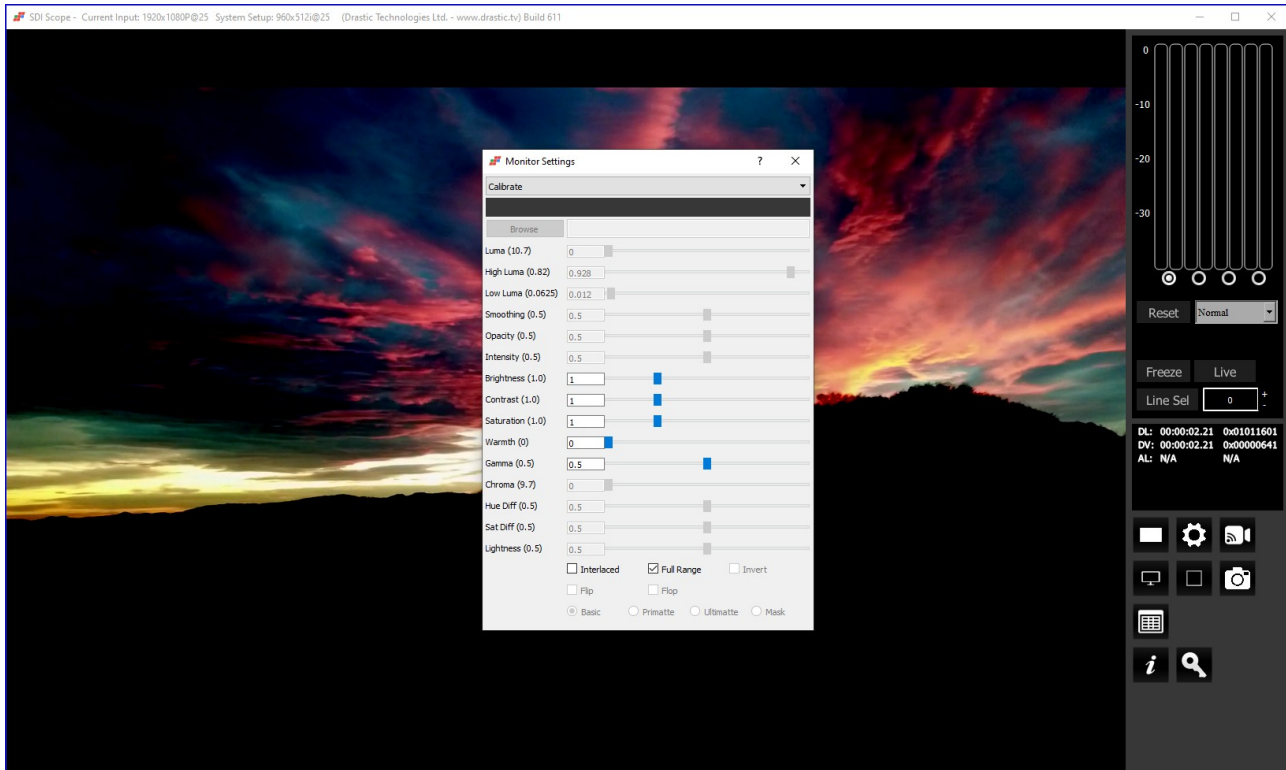


Activates the **Color Picker** (the bar just below the display mode pulldown menu), so the user can choose an appropriate color to contrast from the general hue of the picture. To open the color picker, click on the bar, or press <ENTER>.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Calibrate

Allows the user to calibrate the display settings. Initially this will show the normal picture view. However, as you move the individual sliders, you can adjust the way the image is displayed to accommodate the capabilities of your monitor setup.



Activates the **Brightness**, **Contrast**, **Saturation**, **Warmth**, and **Gamma** sliders, allowing the user to adjust these settings. When active, Brightness, Contrast, Saturation, Warmth, and Gamma can be adjusted by pulling the sliders with the mouse, or using the left and right arrow buttons, in thousandths. Click on the slider and use the < and > keys.

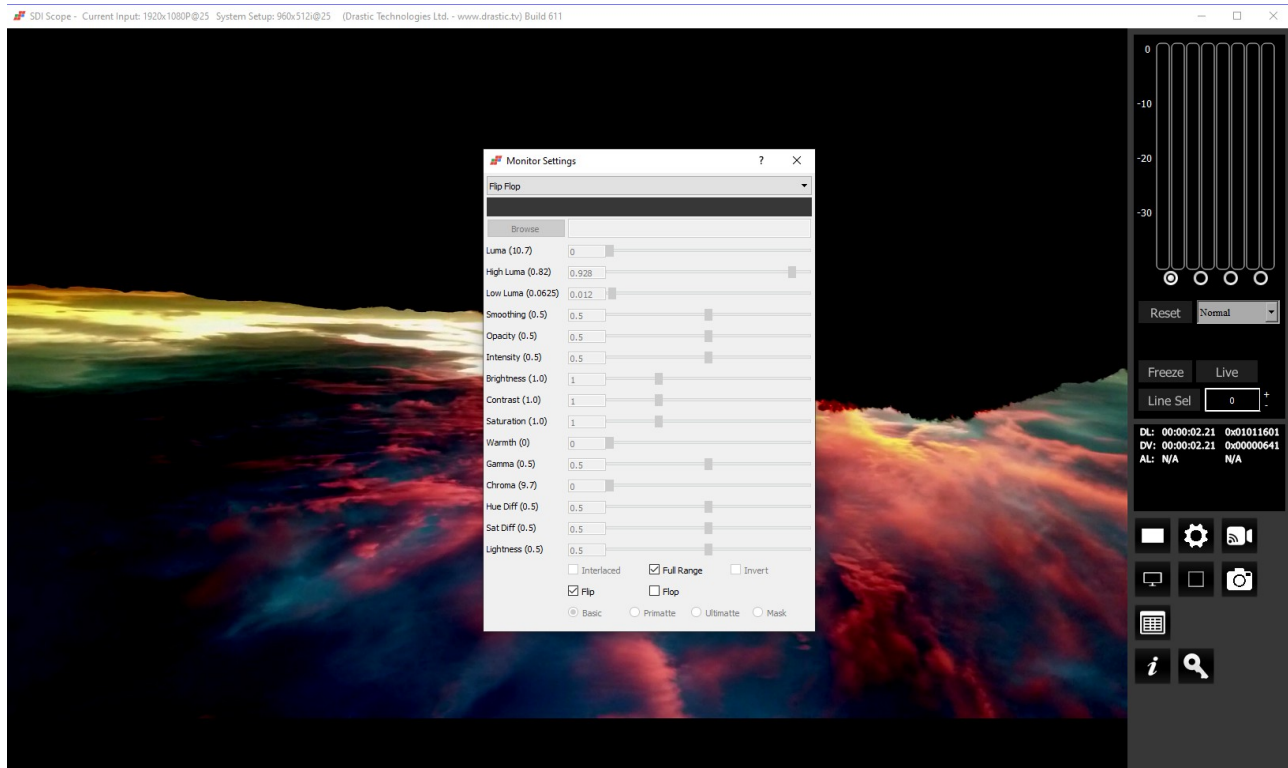
Activates the **Interlaced** checkbox, which allows the user to specify interlaced (checked) or progressive (unchecked) standards to display.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

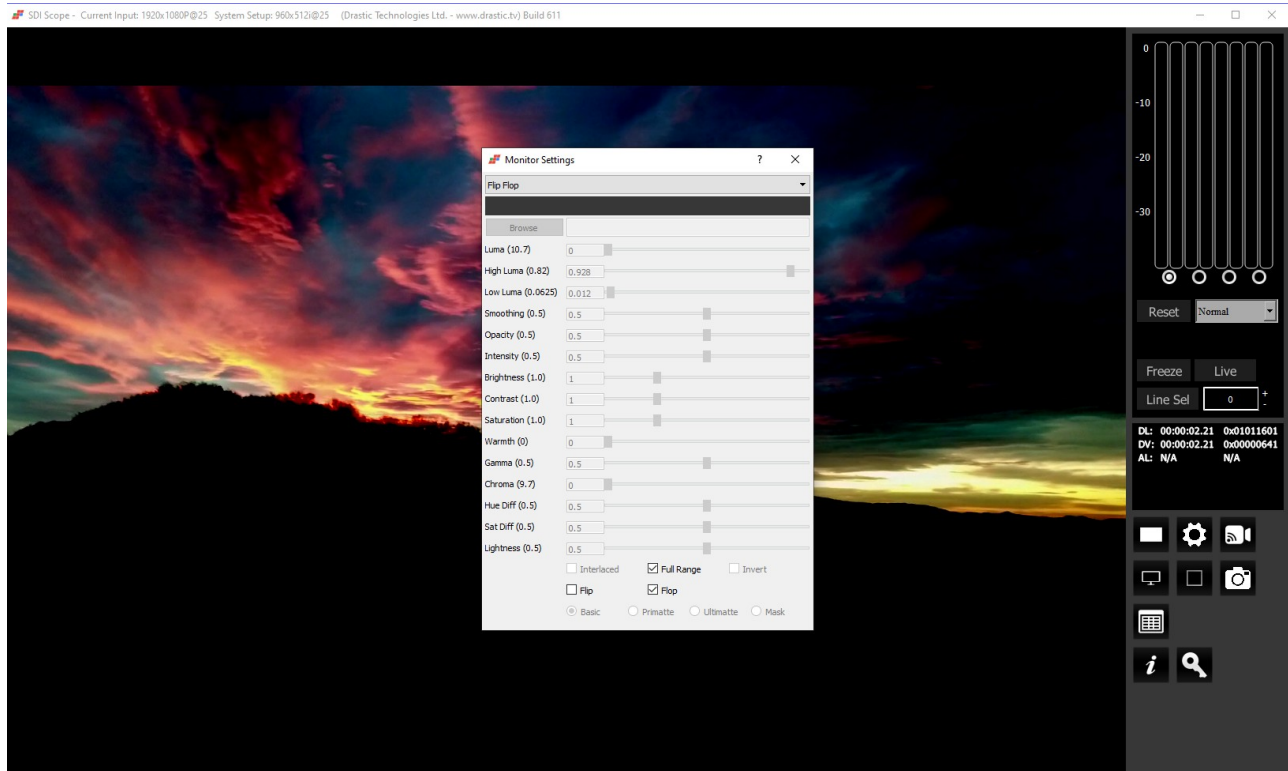
# Flip Flop

Reverse the picture horizontally or vertically.

Activates the **Flip** checkbox, which allows the user to reverse the image top to bottom.



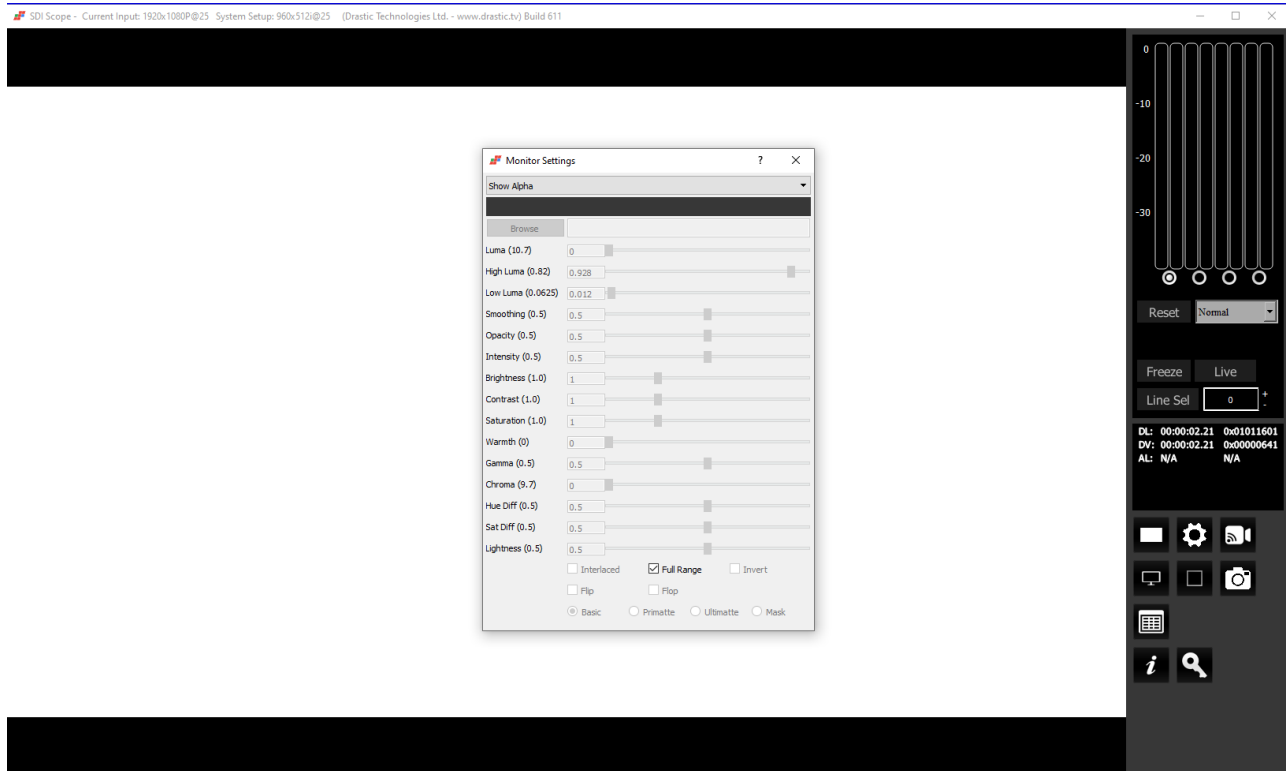
Activates the **Flop** checkbox, which allows the user to reverse the image left to right.



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Show Alpha

Show the alpha component of an RGBA or YCbCr+A signal. If your signal does not have an alpha channel, the screen will simply display white.

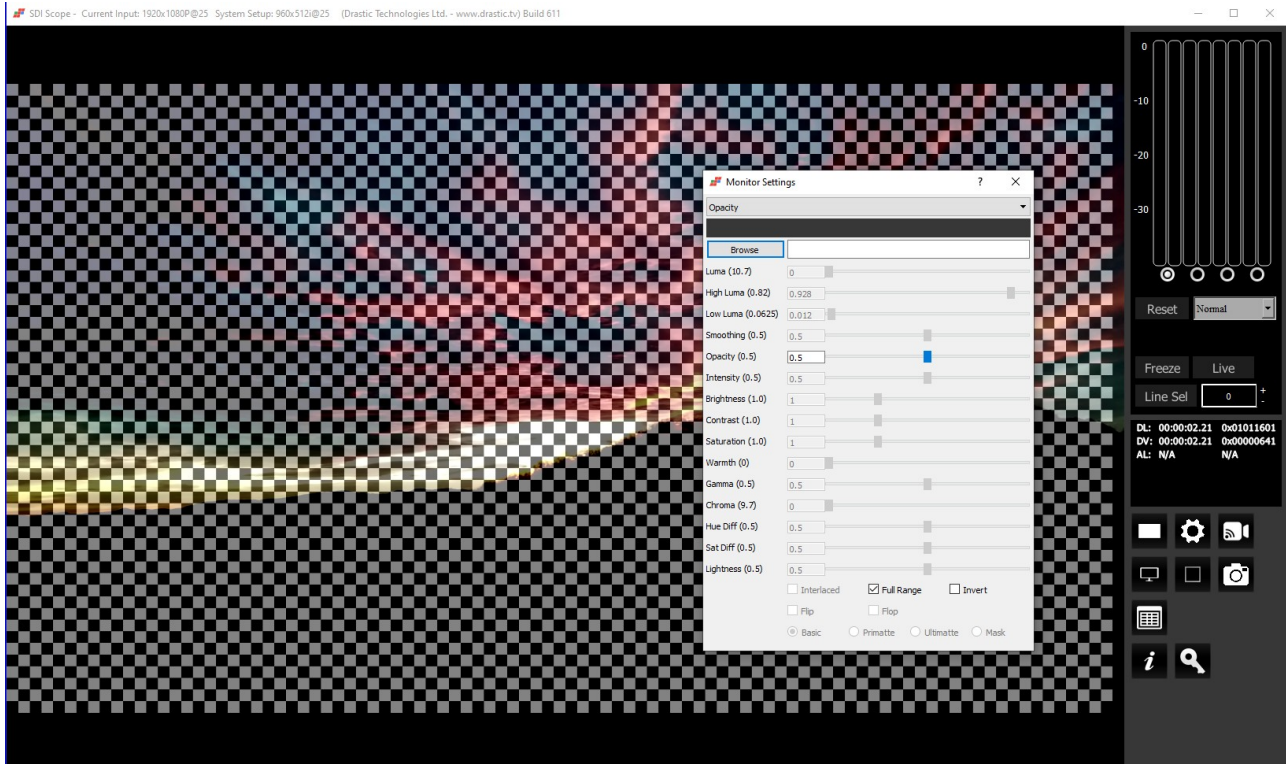


The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.



# Opacity

Mix the signal with a loaded still image for reference, using a checkerboard mix. This setting can be used to compare two images to match a camera position from an existing shot with a new camera, where additional shots are needed for a scene and a new camera needs to match its position.



Activates the **Browse** button. This opens a standard browser, which allows the user to load a TGA/PNG/BMP/JPG/v210/YUV to use as the background to compare live video to the existing image.

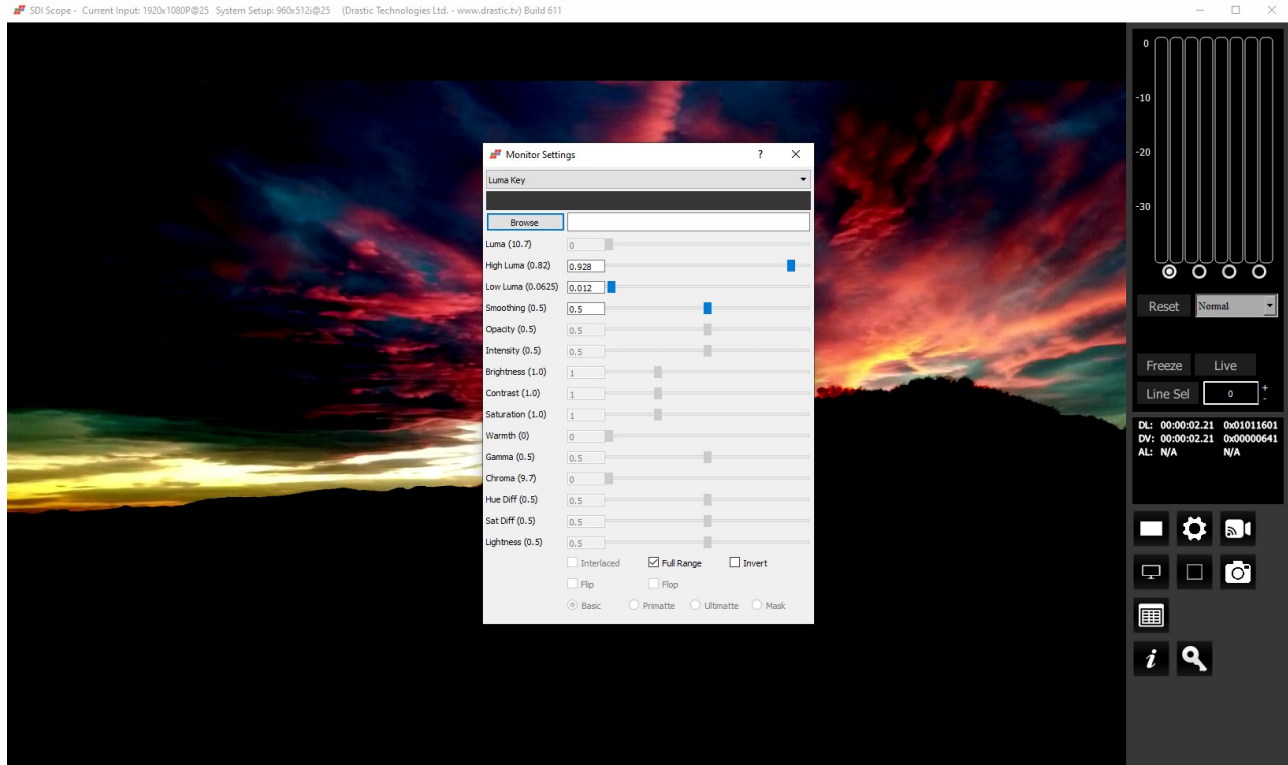
Activates the **Opacity** slider which allows the user to set the opacity level

Activates the **Invert** checkbox. The user can check this box to Invert the key.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Luma Key

Show the video luma keyed over a checkerboard or image.



Activates the **Browse** button. This opens a standard browser, which allows the user to load a TGA/PNG/BMP/JPG/v210/YUV to use as the background for the luma key, instead of the checkerboard.

Activates the **High Luma** slider, so the user can adjust the high luma settings. When active, can be adjusted by pulling the slider, or using the left and right arrow buttons, in thousandths. Click on the slider and use the < and > keys.

Activates the **Low Luma** slider, so the user can adjust the low luma settings. When active, can be adjusted by pulling the slider, or using the left and right arrow buttons, in thousandths. Click on the slider and use the < and > keys.

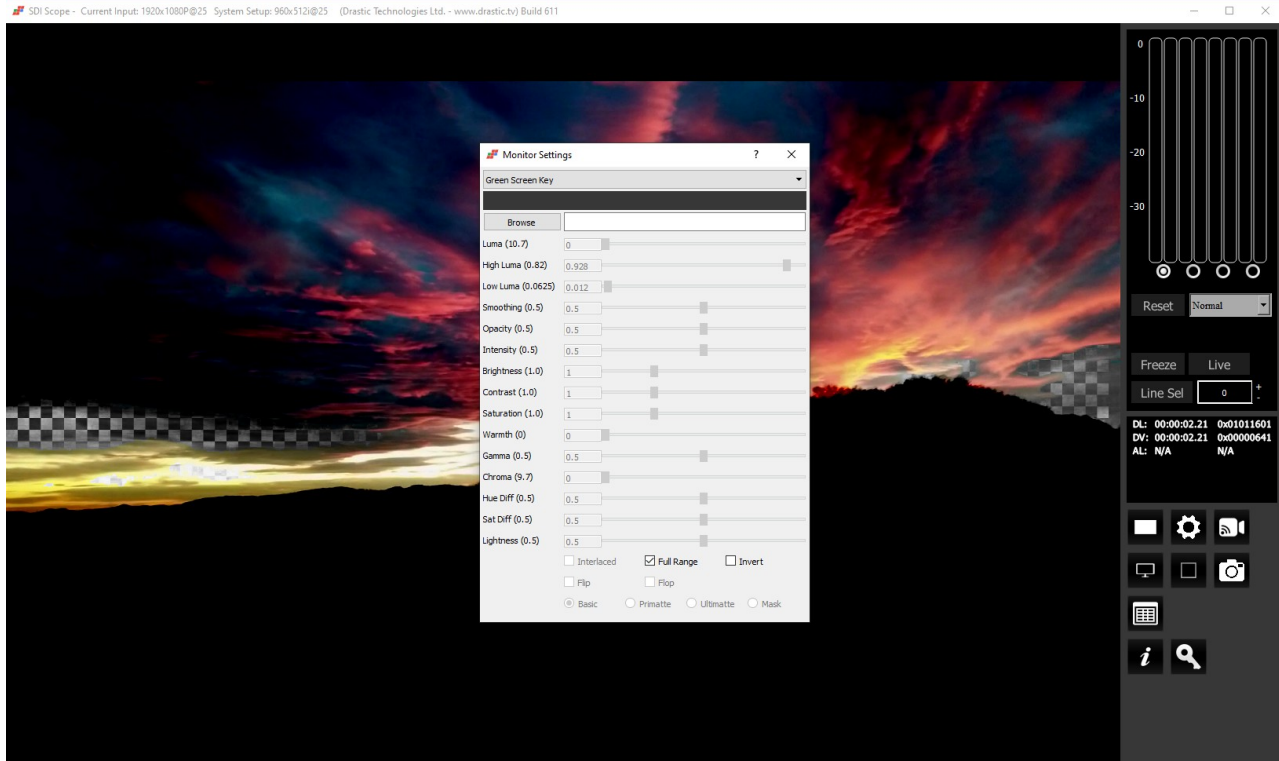
Activates the **Smoothing** slider, so the user can adjust the smoothing settings. When active, can be adjusted by pulling the slider, or using the left and right arrow buttons, in thousandths. Click on the slider and use the < and > keys.

Activates the **Invert** checkbox. The user can check this box to Invert the key.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

# Green Screen Key

Show the image green screen keyed over a checkerboard.



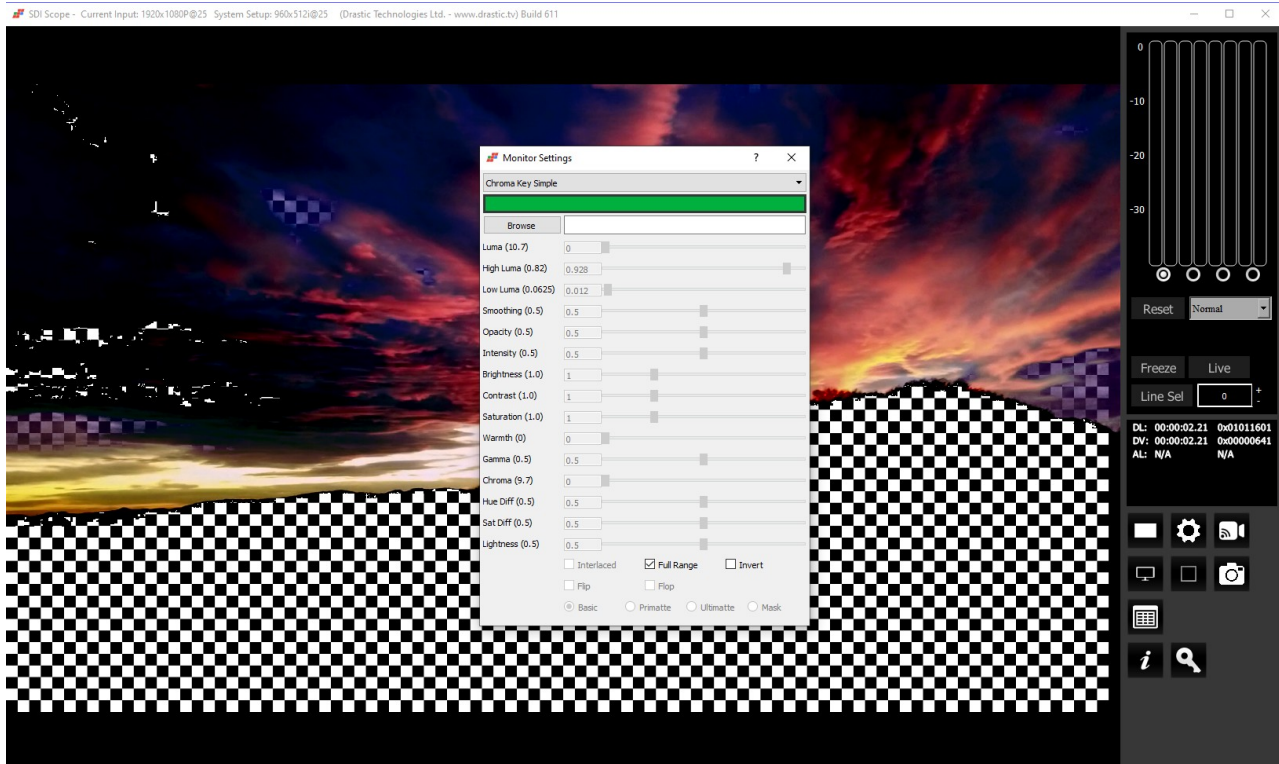
Activates the **Browse** button. This opens a standard browser, which allows the user to load a TGA/PNG/BMP/JPG/v210/YUV to use as the background for the green screen key, instead of the checkerboard.

Activates the **Invert** checkbox. The user can check this box to Invert the key.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

## Chroma Key Simple

Show the image green screened over a checkerboard or image. Chroma Keys are applied to pass through background for a particular color. Green screen and blue screen are specific chroma keys. The Simple looks at each pixel.



Activates the **Color Picker** (the bar just below the display mode pulldown menu), so the user can choose a primary (too low) color other than green. The secondary (too high) color is automatically generated to be a contrasting color to the primary color. To open the color picker, click on the bar, or press <ENTER>.

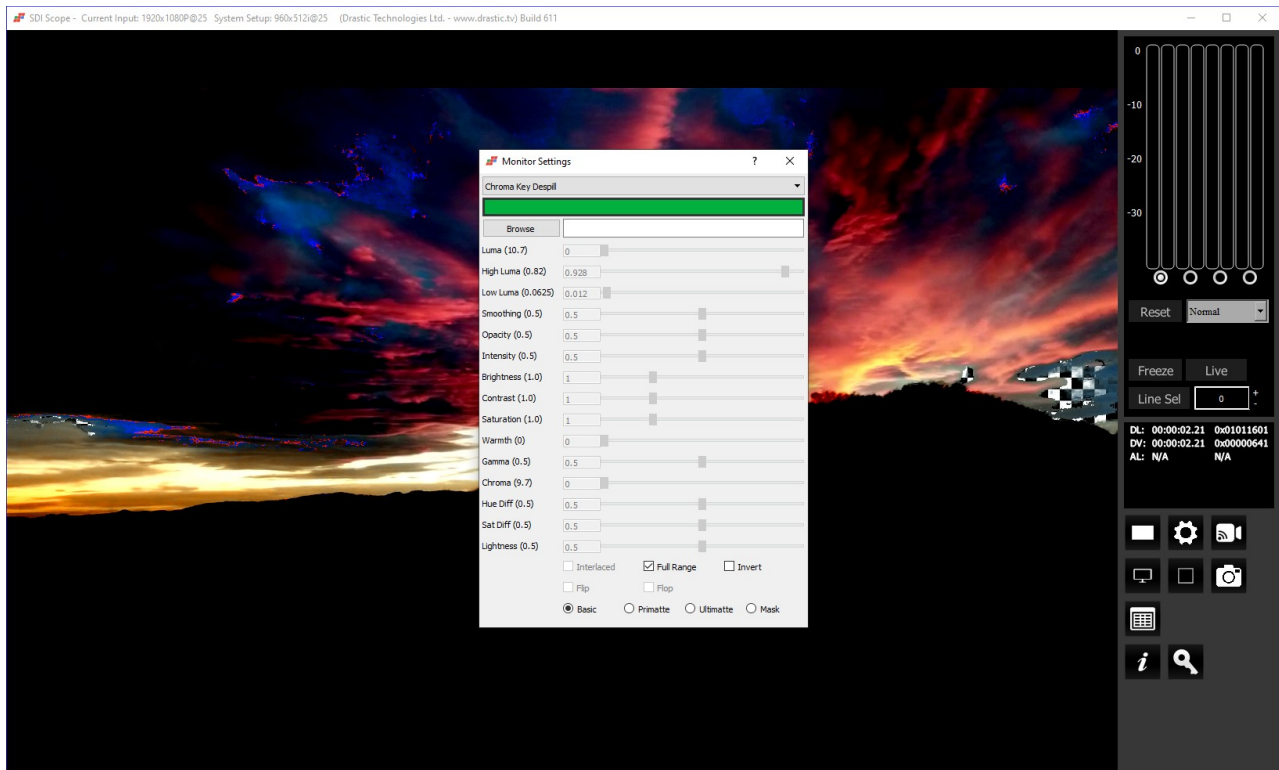
Activates the **Browse** button. This opens a standard browser, which allows the user to load a TGA/PNG/BMP/JPG/v210/YUV to use as the background for the chroma key, instead of the checkerboard.

The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

Activates the **Invert** checkbox. The user can check this box to Invert the key.

## Chroma Key Despill

Chroma Keys are applied to pass through background for a particular color. Green screen and blue screen are specific chroma keys. The Despill applies a mix to the pixels at the edge of the color and any objects in the scene.



Activates the **Color Picker** (the bar just below the display mode pulldown menu), so the user can fine tune the green, or any color used for the chroma key. To open the color picker, click on the bar, or press <ENTER>.

Activates the **Browse** button. This opens a standard browser, which allows the user to load a TGA/PNG/BMP/JPG/v210/YUV to use as the background for the chroma key despill, instead of the checkerboard.

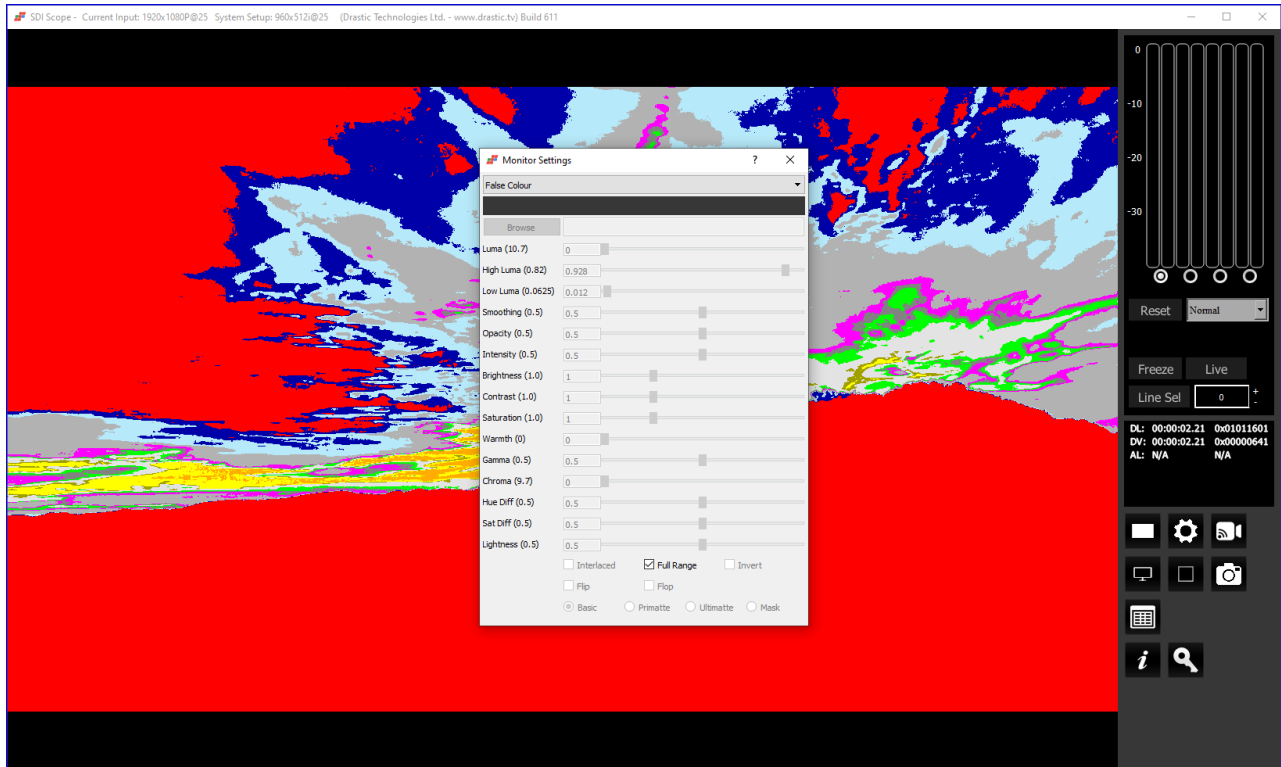
The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

Activates the **Invert** checkbox. The user can check this box to Invert the key.

Activates the **Basic/Primatte/Ultimatte/Mask** radio buttons, which are chroma key despill types/settings. The user may select between these 4 settings using the radio buttons – when one is selected, the rest are automatically deselected.

# False Colour

Show each exposure level as a color. Here is an example:



The **Full Range** checkbox may be checked (use Full video range) or unchecked (use the standard SMPTE range). Full Range lets you adjust how the signal is processed to the display and does not affect any of the graticules.

Here are the IRE Breakpoints in False Colour display mode:

0 to 1.65	Red	Too low
1.65 to 10	Blue	Underexposed
10 to 20	Light Blue	
20 to 42	Dark Grey	
42 to 48	Bright Purple	
48 to 52	Medium Grey	
52 to 58	Green	
58 to 78	Light Grey	Skin Tones
78 to 84	Dark Yellow	
84 to 94	Dark Yellow	
94 to 98	Orange	Overexposed
98 to 100	Red	Too High

The following controls on the **Monitor Settings** window are reserved for future development:

**Intensity** slider – reserved for future development.

**Hue Diff** slider – reserved for future development.

**Sat Diff** slider – reserved for future development.

**Lightness** slider – reserved for future development.

# Manual



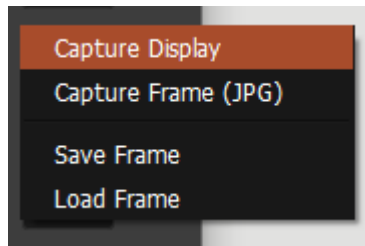
**Manual** button – opens up this manual for quick reference.

## Capture Image

sdiScope lets you capture an image for later reference or examination.



**Capture Image** button – provides options for capturing a frame of video for reference. Opens the following dialog:



**Capture Display** – Capture the main window with the current video and scopes to an image (does not include the GUI controls etc.). Capture Display calls up a save as window [to C:\Users\username\OneDrive\Pictures], set to bmp; the user will need to fill in a filename. You can also save as a png from this dialog.

**Capture Frame JPG** - by selecting this option or using <CTRL>-1, a JPG image can be captured to your C:\Users\username\OneDrive\Pictures\sdiScope directory, using the filename structure: [Input\_DD\_M\_YYYY\_HH\_MM\_SS.jpg] in 8 bit YCbCr mode for easy reading and documentation. 10% and 50% JPG scaled versions can also be captured with <CTR>-5 and <CTRL>-9.

**Save Frame** - The incoming image can be captured as a raw image in full, bit perfect images based on the current system settings. examples include:

- YCbCr 8 bit - .yuv
- YCbCr 10 bit - .v210
- BGRA 8 bit - .bgra
- RGB10 - rgb30

They are saved to your C:\Users\username\OneDrive\Pictures\sdiScope directory by selecting this option or by pressing <CTRL>-0. These files are saved using the [Input\_DD\_M\_YYYY\_HH\_MM\_SS.filetype] filename structure. They can be read with videoQC or converted with MediaReactor, or loaded into sdiScope.

**Load Frame** – opens a browser pointed at your C:\Users\username\OneDrive\Pictures\sdiScope directory so you can load a frame you have saved. The file type pulldown lets you filter to only look for .yuv, or only .v210, or to view all uncompressed files.



# Data View

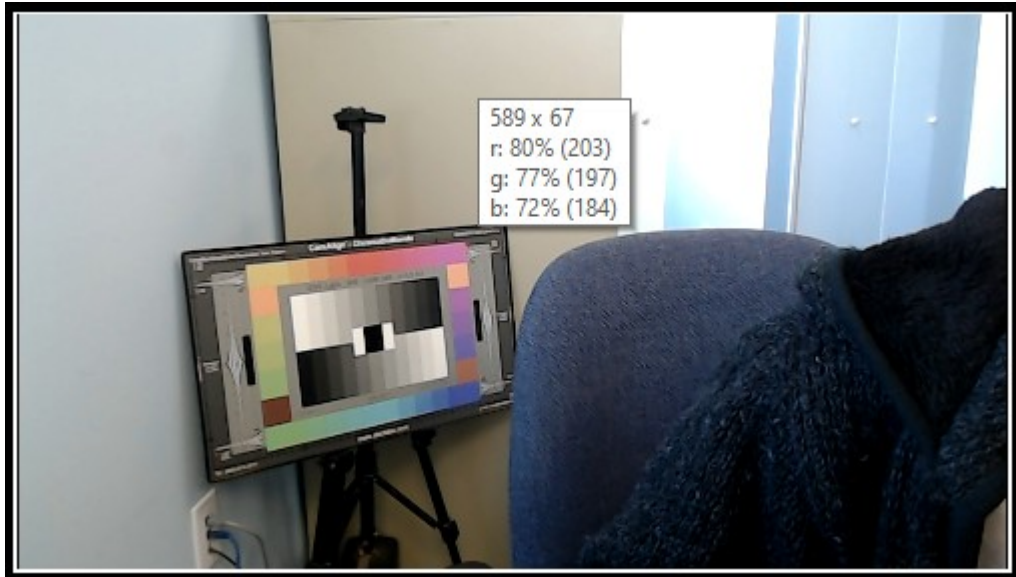


**Data View** button – populates the Display section with the Data view.

- Start Pixel** field – displays the current start pixel. The user can enter a new start pixel, or use the + / - buttons to increment the value up or down.
- Start Line** field – displays the current start line. The user can enter a new start line, or use the + / - buttons to increment the value up or down.
- Hex** and **Dec** radio buttons – select one or the other button to set the values display to either decimal or hexadecimal.
- Freeze** button – freezes the current frame of video for closer inspection
- Find** button – to find a specific hexadecimal value, enter it into the field, then press the find button.
- Show ANC** checkbox – when selected, displays any valid, decoded ANC it can find.

The Data view allows access to the raw pixel values being monitored on the HDMI or SDI input. Raw values are captured and displayed with no manipulation by the software. This mode is perfect for checking vertical blank signaling and metadata, as well as picture issues like inner line sync markers or out of range colors. Pixel starts can be selected, along with lines, in the edit boxes above the data area.

The Data View picture inset also provides real time per pixel data when you hover over any area of the image with the mouse. It displays the specific pixel you are looking at, and shows the RGB values.



The pixels data view analyzes can be set by the user by clicking the **Start Pixel**, or the **Start Line** checkbox, and changing the value. Note, if set to an area outside the signal (such as start pixel 0, start line 0), you will not see any useful information about the video.

Start Pixel	624	+	Start Line	222	+	
624 px	Cb-U	Y0	Cr-V	Y1	Cb-U	Y0
222	0x0083	0x00A3	0x007D	0x00A3	0x0083	0x00A3
223	0x0083	0x00A3	0x007D	0x00A3	0x0083	0x00A3
224	0x0083	0x00A3	0x007D	0x00A3	0x0083	0x00A3
225	0x0083	0x00A3	0x007D	0x00A3	0x0083	0x00A3
226	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
227	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
228	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
229	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
230	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
231	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2
232	0x0083	0x00A2	0x007D	0x00A2	0x0083	0x00A2

The Data View can be set to display either hexadecimal, or decimal values for each pixel:

Start Pixel		333		Start Line		222		Hex		Dec	
332 px	Cb-U	Y0	Cr-V	Y1	Cb-U	Y0	Cr-V	Y1	Cb-U		
222	0x0072	0x0077	0x0068	0x0078	0x0071	0x0078	0x0068	0x0078	0x0073		
223	0x0072	0x0077	0x0068	0x0077	0x0071	0x0077	0x0068	0x0077	0x0072		
224	0x0072	0x0075	0x0068	0x0075	0x0071	0x0075	0x0068	0x0075	0x0072		
225	0x0072	0x0074	0x0068	0x0073	0x0071	0x0073	0x0068	0x0073	0x0072		
226	0x0072	0x0073	0x0066	0x0073	0x0071	0x0073	0x0066	0x0073	0x0072		
227	0x0072	0x0073	0x0066	0x0073	0x0071	0x0072	0x0066	0x0072	0x0072		
228	0x0072	0x0073	0x0066	0x0072	0x0071	0x0072	0x0066	0x0072	0x0072		
229	0x0072	0x0072	0x0066	0x0072	0x0071	0x0072	0x0066	0x0072	0x0072		

Start Pixel		333		Start Line		222		Hex		Dec	
332 px	Cb-U	Y0	Cr-V	Y1	Cb-U	Y0	Cr-V	Y1	Cb-U		
222	0115	0119	0103	0119	0115	0120	0103	0120	0115		
223	0115	0118	0104	0118	0115	0119	0104	0119	0115		
224	0115	0117	0104	0117	0115	0117	0104	0117	0115		
225	0115	0116	0104	0116	0115	0116	0104	0116	0115		
226	0114	0117	0103	0116	0114	0116	0103	0116	0115		
227	0114	0116	0103	0116	0114	0116	0103	0115	0115		
228	0114	0115	0103	0115	0114	0114	0103	0114	0115		
229	0114	0115	0102	0114	0114	0113	0102	0113	0115		

Hexadecimal values are shown above on the left, and the decimal values on the right.

## Info button



Opens the splash screen, so the user can quickly confirm which version of sdiScope they are running.



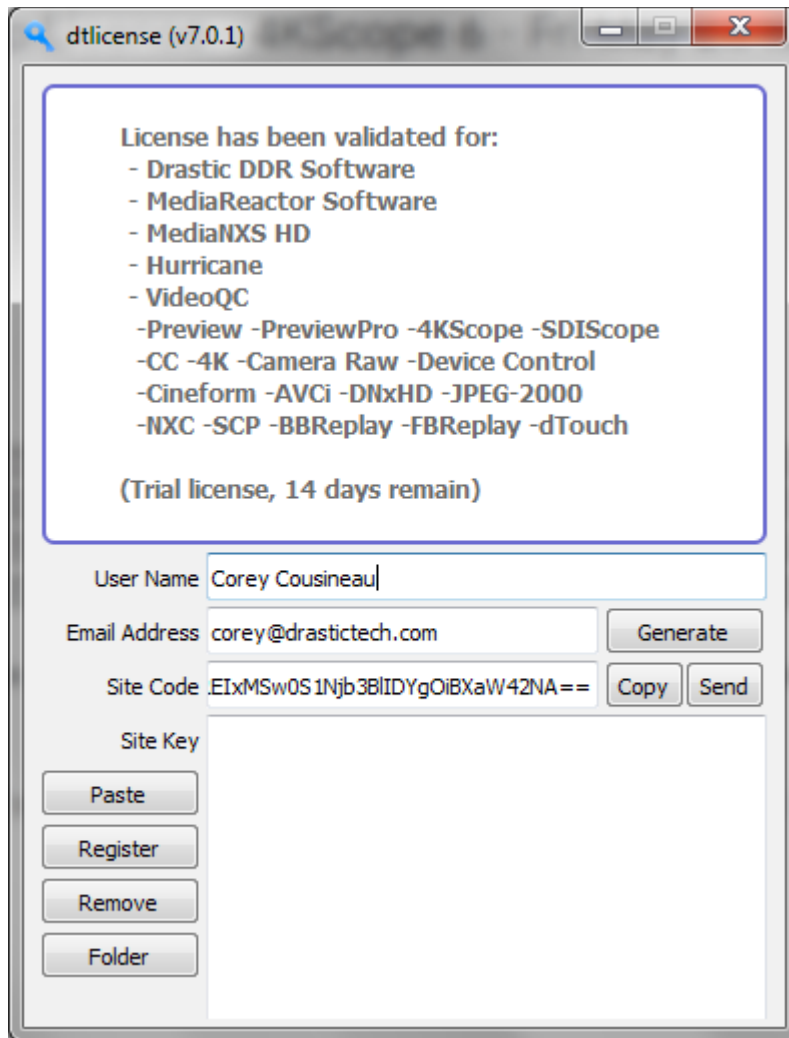
# License

The license button.



This button opens the licensing dialog so the user can confirm their license status, and update the license with a new site key. The user can also access this control via the Configuration menu.

The licensing dialog looks like this:



- The top field displays the current status of the license.
- The **User Name** field allows the user to type in a first and last name during the licensing process.
- The **Email Address** field allows the user to type in the email at which they would like to receive the site key for their license.
- Once the name and address fields have been filled out, pressing the **Generate** button

populates the Site Code field with a string of alphanumeric characters. This string is the Site Code.

- The **Site Code** field is where the site code displayed during the licensing process. The user may select the site code and use Ctrl+C to copy it to the clipboard, or use the Copy button. The user will need to send the site code to Drastic Authorization to get a Site Key to enable the license.
- If the system has been set up with email, pressing the **Send** button will open a new email to Drastic Authorization, with the site code in the body of the email.
- Once a reply email containing the Site Key has been returned by Drastic Authorization, copy it, then paste it into the **Site Key** field either using the Paste button or Ctrl+V.
- Once the Site Key has been pasted into the Site Key field, pressing the **Register** button registers the license. The system may need to be restarted for the change in license status to be updated. Pressing the x in the upper right corner will close the License window.
- Press the **Done** button to enable any changes, and close the **Settings** window.

# Advanced

## Zoom and Pan

sdiScope supports zooming the waveform monitors and vectorscope for a closer look at low saturation signals, or the luma elements of the waveform. The live picture can also be zoomed in or out, and panned with the mouse.

To zoom, place the mouse over the picture or scope, and roll the mouse wheel.

To pan the picture, click on it and drag it until the area of interest is visible.

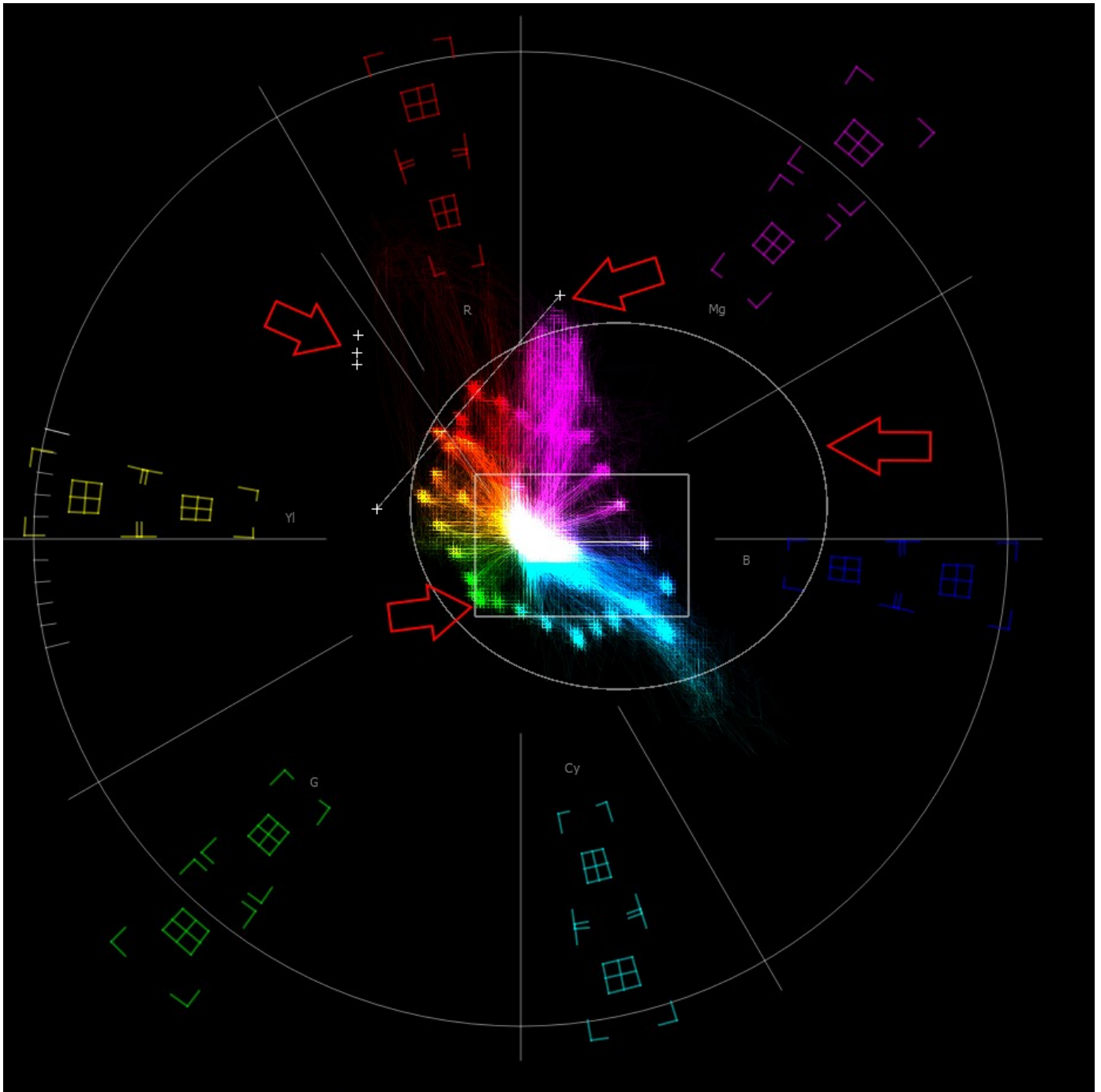
To reset to normal zoom, right click the mouse.

## Mouse Control

sdiScope features extended mouse controls. These include:

- <MouseWheel> - zoom in and out symmetrical
- <MouseWheel><Alt> - zoom X axis
- <MouseWheel><Ctrl> - zoom Y axis
- <RightClick> - reset zoom to view all
- <LeftClick>Drag - pan and scan the video image in the app
- <MiddleClick> - zoom 1:1
- <DoubleLeftClick> - enter and exit full screen mode
- <T> - enable or disable time code display in full screen

## Making Marks/Guides (cross, line and box)



- <SHIFT><LeftClick> - Make a point/cross
- <SHIFT><ALT><LeftClick> - Undo last
- <SHIFT><CTRL><LeftClick> - Drag to make a line
- <SHIFT><CTRL><ALT><LeftClick> - Drag to make a box
- <CTRL><ALT><LeftClick> - Drag to make an ellipse
- <SHIFT><RightClick> - Clear all markers/guides



# Setup

## Install the Software

Install **sdiScope** software on the system. Regardless of the delivery method, the software will be available at some level as an (executable) installable file. Double-click on the file, or right click and select **Open** from the context menu. Follow the prompts to set where the software should be installed and make other installation-specific decisions.

## Supported Hardware

To take full advantage of the widest range of the hardware based features of **sdiScope**, the system should contain one of the supported AJA, Blackmagic, Matrox or Bluefish444 boards. There are also a number of low cost alternatives for various SD and HD workflows. The board's manufacturers will have the most up to date information for system specifications and recommended drivers.

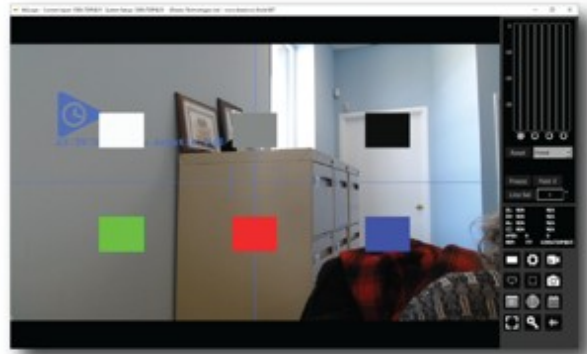
- [Bluefish444](#): Epoch Supernova, Epoch Neutron, KRONOS
- [AJA](#): KONA LHe/plus, KONA LHi, KONA 3G, KONA 4, KONA IP, KONA 5, KONA HDMI, Io-XT, Io-4K, OEM2K, Corvid Series, U-TAP
- [Blackmagic](#) (version 11/12 drivers required): UltraStudio, DeckLink, Intensity Pro, Intensity, Mini Recorder, UltraScope, HyperDeck, Ursa, BMPCC
- [NewTek](#): NDI<sup>®</sup>
- [Inogeni](#): 4K, 3G, DVI, VGA/CVBS
- [Magewell](#): HDMI and SDI USB-3 devices
- [Logitech](#): HDMI Screen Share
- [Elgato](#): Game device capture devices
- [Mokose](#): HDMI/SDI USB-3
- [Epiphan](#): AV.io HDMI/SDI/4K
- [Digitnow](#): HDMI USB Capture
- [Rybozen](#): HDMI USB Capture
- [Microsoft](#): USB Cameras
- [UVC](#): Most UVC (USB Video Class) compliant video devices

There are versions of sdiScope for Windows, and macOS.

# License the Software

## How Do I Remove the Watermarks?

If you run Drastic software without a license, many of the features will be unavailable. Also, there will be watermarks you cannot remove (image below), 10 second media duration, length of run limitations, no hardware support, nag screen, auto-shutoff, and other significant limitations. To remove these limitations, you will need a valid license.



*Sample watermarks*

In order to license sdiScope, open sdiScope and navigate to the Settings ("Gear" icon at the bottom right of the application). Next click on the "License" button at the bottom of the Settings menu box and then follow the steps at the following location: <http://license.drastictech.com/>

## Run the Software

Run the software. If the default installation path is used, you can open it at: **Start|Programs|Drastic sdiScope|sdiScope**. The software will then need to be set up.

## Setup Window

Confirm that the signal you wish to monitor is connected to the correct input(s) of the video board. Click on the **Setup** button to confirm or adjust any settings for the type of signal format being used. Once the system is correctly set up, pressing the **Done** button closes the **Setup** window.

# Operations

**sdiScope** can be used to view an input signal through supported AJA, Bluefish444, Matrox or Blackmagic video hardware. Once a capable system has been equipped with an install of sdiScope, the user may connect a signal to the appropriate inputs and begin to use the software.

Multiple inputs may be connected to a switcher to compare and adjust any mismatched parameters of setup.

Use the **Setup** Window to confirm or adjust any settings for your video signal.

Use the **Scope Config** window to set the layout (number and arrangement of windows), and which window uses which scope.

At this point if all has been properly set up, the user should be able to view their signal through the appropriate scopes and other signal analysis tools.

## Controlling sdiScope

sdiScope supports both command line parameters and keyboard control. This command line parameters can be used to allow sdiScope to open automatically on startup in the mode and size required. The keyboard commands can be used to capture compressed and uncompressed frames directly from the incoming signal.

### Command Line Parameters

```
sdiScope -f -m -s D H P R W V
-f Open in full screen mode
-m Open in maximized mode
-s Open in standard mode
D Show Data view on open
H Show Histogram view on open
P Show Picture view on open
R Show Waveform RGB on open
W Show Waveform on open
V Show Vectorscope on open
```

### Keyboard Commands

```
<SPACE> Freeze/Thaw data view
<ALT>-A - Display mode alpha only
<CTRL>-A - Set to audio vector
<ALT>-B - Display mode blue only
<ALT>-C - Display mode clipping
D - Show the frozen frame
<ALT>-D - Display Mode flip flop
<CTRL>-D - Show data view
<ALT>-E - Display mode edges
<CTRL>-E - Show scope view
F - Toggle full screen
<ALT>-F - Display mode focus assist
```

<CTRL>-F - Freeze and thaw  
 <ALT>-G - Display mode green only  
 <CTRL>-G - Set to chromaticity  
 <ALT>-I - Display mode calibrate  
 <CTRL>-I - Set to audio histogram  
 <ALT>-J - Display mode luma key  
 <ALT>-K - Display mode chroma key  
 <ALT>-L - Display mode luma only  
 M - Show mix of live and frozen signal  
 <ALT>-M - Display mode false color  
 <ALT>-N - Display mode none  
 <ALT>-O - Display mode opacity  
 <ALT>-P - Display mode chroma key despill  
 <CTRL>-P - Set to picture  
 <CTRL>-Q - Set to audio phase  
 <ALT>-R - Display mode red only  
 <CTRL>-R - Set to waveform RGB  
 S - Show the live signal  
 <ALT>-S - Display mode green screen  
 <CTRL>-S - Set to status  
 <CTRL>-T - Set to timing  
 <ALT>-V - Display mode buffer weighted  
 <CTRL>-V - Set to vectorscope  
 <ALT>-W - Display mode weighted RGB  
 <CTRL>-W - Set to waveform  
 <ALT>-X - Display mode expt  
 <CTRL>-X - Set to audio wave  
 <ALT>-Y - Display mode zebra chroma  
 <ALT>-Z - Display mode zebra luma  
 1 - set first scope for flags and type  
 <ALT>-1 - set to single scope  
 2 - set second scope for flags and type  
 <ALT>-2 - set to two scopes  
 3 - set third scope for flags and type  
 4 - set forth scope for flags and type  
 <ALT>-4 - set to four scopes  
 5 - set fifth scope for flags and type  
 6 - set sixth scope for flags and type  
 <ALT>-6 - set to six scopes  
 <ESC> Leave full screen mode  
 <CTRL>-0 Capture uncompressed frame as YUV (8 bit), v210 (10 bit), RGB10 (10 bit) These are headerless frames, with only the raw data in them. They can be viewed or read in Drastic software like videoQC or loaded into sdiScope for review. Please contact Drastic for the bit format of these files.  
 <CTRL>-1 Capture a full size JPG image (in 8 YCbCr bit only)  
 <CTRL>-2 Capture a 50% size JPG image (in 8 YCbCr bit only)  
 <CTRL>-3 Capture a 25% size JPG image (in 8 YCbCr bit only)  
 <CTRL>-4 Capture a 10% size JPG image (in 8 YCbCr bit only)  
 <CTRL>-9 Capture a 1% size JPG image (in 8 YCbCr bit only)

This manual has been compiled to assist the user in their experience using **sdiScope** software. It is believed to be correct at the time of writing, and every effort has been made to provide accurate and useful information. Any errors that may have crept in are unintentional and will hopefully be purged in a future revision of this document. We welcome your feedback.

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