



## DVDO iScan Duo Owner's Manual Supplement

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Firmware Version : 2.00 Build 051

This document provides additional information for the DVDO iScan Duo configured with the latest firmware. It is a supplement to the iScan Duo user manual.

### **1. Color Management System**

This iScan Duo release incorporates several new features that can be loosely categorized as Color Management System. These features include Color Gamut Controls, Chromaticity Controls and Gray Scale Controls. The CMS features make the iScan Duo a useful tool for calibrating displays.

DVDO strongly recommends the use of a good colorimeter for display calibration.

The following sections describe new features.

#### **Input Chromaticity**

For accurate calibration of the display and the rest of the signal chain, it is important to correctly set the input chromaticity for the iScan Duo. Chromaticity in this case includes the color and white point values along the CIE (1931) color chart.

This new control is available in the Input Adjust menu.

Main Menu > Input Adjust > Chromaticity

By default the Chromaticity is set to 'Auto', which sets the chromaticity based on the input format. For example, if the input format is 1080p (HD), the chromaticity is based on BT.709.

The chromaticity can also be manually set from this menu, which contains standard profiles including RGBs/709, NTSC, PAL/SECAM, SMPTE-C, CIE1931, AppleRGB and Adobe 1998.

When the Chromaticity is selected, the 'hint' area of the on-screen display shows corresponding color and white point x, y values (red (xr, yr), blue (xb, yb), green (xg, yg) and white (xw, yw)).



Note: This control is currently not updating the chromaticity values in our input EDID

## **Output Chromaticity**

Similarly, there are the Output Chromaticity controls which are required for accurate calibration.

This control is typically not required since the Color Gamut control can correct for incorrect chromaticity values provided by the display EDID. Users can think of this control as a coarse color control, which may be useful when a meter is not available.

This new control is available in the Output Setup menu.

Main Menu > Output Setup > Chromaticity

By default the Chromaticity is set to 'Auto', which sets the chromaticity based on the chromaticity information in the display's EDID.

The chromaticity can also be manually set from this menu, which contains standard profiles including RGBs/709, NTSC, PAL/SECAM, SMPTE-C, CIE1931, AppleRGB and Adobe 1998.

When the Chromaticity is selected, the 'hint' area of the on-screen display shows corresponding color and white point x, y values (red ( $x_r, y_r$ ), blue ( $x_b, y_b$ ), green ( $x_g, y_g$ ) and white ( $x_w, y_w$ )).

## **Color Gamut**

The Color Gamut control allows adjustment of Red, Green, Blue primary colors and white point on the CIE colorimetry chart. The Gamut adjustments are relative to the selected output chromaticity.

This new control is available in the Output Setup menu.

Main Menu > Output Setup > Color Gamut

There are two ways to use this control.

- a) Using the iScan Duo's test pattern generator as a reference color source
- b) Using an external video source to generate the reference test patterns



### Using iScan Duo's Test Pattern Generator

1. Enable test pattern generator by pressing the 'Test Pattern On/Off' button on the Duo's remote or using the on-screen menu Output Setup > Test Patterns > On.
2. Adjust primaries and white point using the on-screen menu.

The RGB indicator on the left side of the screen shows the input RGB signal going into the CMS processor. The RGB indicator on the right side shows the output RGB signal from the CMS processor. The units for these indicators as well as the adjustment values are in percentage of full range gamma-corrected RGB.

3. There are 8 chromaticity offset controls
  - a. Red-x
  - b. Red-y
  - c. Green-x
  - d. Green-y
  - e. Blue-x
  - f. Blue-y
  - g. White-x
  - h. White-y
4. When Red is being adjusted, the Duo automatically generates a red test pattern. Similarly, when Green, Blue and white are being adjusted, the green, blue and red signals are generated by the Duo.

### Using an reference signal connected to iScan Duo's input

The Duo's test pattern generator should be turned off in this mode. Provide the reference primary and white signal that needs to be measured and adjusted and use the on-screen menu as described in the previous section.

### **Gray Scale Control**

The Gray Scale control allows gray scale adjustment in 11 steps from 0 IRE to 100 IRE in 10 IRE increments.

This new control is available in the Output Setup menu.

Main Menu > Output Setup > Gray Scale



There are 2 ways to use this control.

- a) Using the iScan Duo's test pattern generator as a reference source
- b) Using an external video source to generate the reference test patterns

#### Using iScan Duo's Test Pattern Generator

1. Enable test pattern generator by pressing the 'Test Pattern On/Off' button on the Duo's remote or using the on-screen menu

Output Setup > Test Patterns > On

2. There are 11 levels of control under Gray Scale

0 IRE  
10 IRE  
20 IRE  
30 IRE  
40 IRE  
50 IRE  
60 IRE  
70 IRE  
80 IRE  
90 IRE  
100 IRE

3. The Duo automatically generates the relevant windowed test pattern for each control above. For example when 50 IRE is selected, the Duo automatically generates a 50 IRE signal.
4. Adjust Red, Green, Blue component to achieve to correct gray level.

The indicators on the on-screen menu has the same units as that of the Color Gamut control (percentage of full range gamma corrected RGB)

#### Using an reference signal connected to iScan Duo's input

The Duo's test pattern generator should be turned off in this mode. Provide the reference gray scale that needs to be calibrated and use the on-screen menu as described in the previous section.



## **2. Support for Audio only optical and coax sources**

This feature is for users who have digital audio only (coax and optical) source (i.e. no video source) and want to use it with Duo. Previously this feature is not available because the Duo goes into standby mode when there is no video input (auto standby-on).

The Duo now detects the presence of digital audio (coax and optical) inputs in addition to video inputs.

To use this feature

- a) Select an unused video input
- b) Assign the audio input that is connected to the audio only source using the on-screen menu below.

Main Menu > Input Adjust > Audio Input

- c) Selecting the unused video input effectively selects the audio input.

This feature is independent of the output and will work with all four of the Duo's audio outputs (HDMI A/V 1, HDMI A/V 2, HDMI Audio and Digital coax/digital).

## **3. HDCP is enabled on the output only if input is encrypted.**

The previous Duo software enables HDCP (encryption) if it detects an HDCP based display even if the input signal is unprotected. The current version enables HDCP only if the input signal is HDCP encrypted.