iScan™ Duo

DUAL OUTPUT HIGH-DEFINITION VIDEO PROCESSOR

DVDO

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Customer Support

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VRS
by Anchor Bay

OWNER'S MANUAL

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iScan Video Processors	**1 Year**	**1 Year**

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DVDO has appointed a number of Authorized Service Companies throughout the U.S.A. should your product require service. To receive warranty service you need to present your sales receipt or, if rented, your rental contract showing place and date of original owner's transaction. If shipping the unit you will need to package it carefully and send it, transportation prepaid by a traceable, insured method, to the Authorized Service Company. Package the product using adequate padding material to prevent damage in transit. The original container is ideal for this purpose. Include your name, address and telephone number where you can be reached during business hours.

On all complaints and concerns in the USA call Customer Support at **1-866-423-3836.**
For hook-up and operation of your unit or to locate an Authorized Service Company, please call or write:

TECHNICAL SUPPORT DEPARTMENT
DVDO BY ANCHOR BAY TECHNOLOGIES, INC.
300 Orchard City Drive, M/S 131
Campbell, CA 95008
1-866-423-3836
http://www.DVDO.com

DISPUTE RESOLUTION

Following our response to any initial request to Customer Support, should a dispute arise between you and DVDO, DVDO makes available its Complaint Resolution Program to resolve the dispute. The Complaint Resolution Program is available to you without charge. You are required to use the Complaint Resolution Program before you exercise any rights under, or seek any remedies, created by Title I of the Magnuson-Moss Warranty-Federal Trade Commission Improvement Act, 15 U.S.C. 2301 et seq.

To use the Complaint Resolution Program call 1-866-423-3836 and explain to the customer service representative the problem you are experiencing, steps you have taken to have the product repaired during the warranty period and the name of the authorized Distributor/Dealer from whom the DVDO product was purchased. After the complaint has been explained to the representative, a resolution number will be issued. Within 40 days of receiving your complaint, DVDO will investigate the dispute and will either:

(1) respond to your complaint in writing informing you what action DVDO will take, and in what time period, to resolve the dispute; or (2) respond to your complaint in writing informing you why it will not take any action.

RECORD THE PLACE AND DATE OF PURCHASE FOR FUTURE REFERENCE

Model No. _____ Serial No. _____ Purchase Date _____

Purchased From _____

KEEP THIS INFORMATION AND YOUR SALES RECEIPT IN A SAFE PLACE

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Introduction

The iScan™ Duo high-definition video processor is Anchor Bay's first dual-output video processor. It allows a convenient connection to two displays, for example a projector and an LCD TV. Furthermore the iScan Duo is an intelligent central switching hub which connects all of your audio/video source devices to your displays and A/V receiver. The iScan Duo features a full-suite of Anchor Bay's award winning VRS™ Video Reference Series technologies including:

- 10-bit Precision Deinterlacing™ of 480i/576i/1080i
- 10-bit Precision Video Scaling™ up to 1080p
- PReP™, Progressive ReProcessing of 480p/576p/1080p
- Mosquito Noise Reduction
- Fine Detail Enhancement
- Edge Enhancement
- Precision A/V LipSync™
- Progressive Cadence Detection™ of 480p/576p/720p/1080p
- Rightrate™ High Performance Frame Rate Conversion

The iScan Duo also offers a number of innovative features, including:

- 8 HDMI 1.3 (High Definition Multimedia Interface) Inputs
- 2 HDMI 1.3 Outputs
- 1 HDMI 1.3 Audio Output for direct connection to an A/V Receiver
- Multi-standard high definition analog video decoder with 3D comb filter
- 2 Programmable 12V Triggers to control other devices

This Owner's Manual will help you set up your iScan Duo, and provide the necessary information required to get the best picture quality to your displays and A/V receiver. It will also show you how to properly use it with the other components in your system.

Unpacking and Inspection

Please verify that your iScan Duo carton contains the following items:

- iScan Duo Video Processor
- Universal 12V@5A AC-to-DC Power Converter
- US IEC Power Cord (International Customers, consult your local authorized DVDO reseller)
- Remote Control
- iScan Duo Owner's Manual
- iScan Duo Quick Start Guide
- Serial Cable for Automation
- Rack Mount Kit
- Std-A to Mini-B plug 5-pin USB cable

If you are missing any items, please contact your dealer or the DVDO Support Team.

Additional cables or adapters are required to connect the iScan Duo to your source(s) and display(s). Both input and output cables can be supplied by your Authorized DVDO Reseller. To find your nearest Authorized DVDO Reseller, visit **www.dvdo.com**.

Display Compatibility Requirements

The iScan Duo is compatible with a wide range of displays including digital TVs, projectors and monitors. Your display is compatible with the iScan Duo if it has an HDMI or DVI input. The iScan Duo is not compatible with displays with analog inputs.

> **Note:** If your display has a DVI input, verify that it is HDCP-compliant. If your display is not HDCP-compliant you will need to use the component or other analog connections from your source.

Document Conventions and Menu Navigation

Text that is in **bold** refers to a button on the remote control or on the front panel.

Text that is in *italic* refers to an item that is in the On Screen Display (OSD).

The ◀, ▶, ▼, and ▲ symbols refer to the navigational buttons on the remote control and the front panel.

In this Owner's Manual, an action that requires navigating the iScan Duo's menu system is referred to in the following abbreviated form:

Picture Controls ⇨ **Brightness** ⇨ **0**
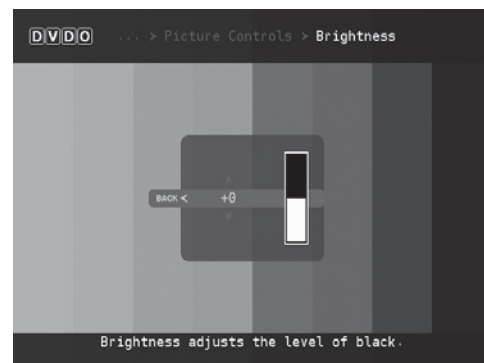
In the example above, press **MENU** to access the iScan Duo main menu. Press ▼ button to select *Picture Controls*. Press **ENTER** or ▶ button to access the menu under *Picture Controls*. Press ▼ button to select *Brightness* followed by **ENTER** or ▶ button to control *Brightness*. Use ▼ or ▲ button to adjust brightness. Press **EXIT** to exit the menu system.

Menu Navigation

The iScan Duo can be controlled using one of the following ways:

- The front panel controls
- The remote control
- A programmed universal remote control
- The serial connection on the back panel

The menu navigation controls on the remote control are duplicated on the iScan Duo front panel.

To navigate the menu:

1. Press the **MENU** button.
2. Use the navigation buttons (◀, ▲, ▼, ▶) to highlight the parameter you want to change.
3. Press the **ENTER** or ▶ button to select the parameter and the ▲ and ▼ buttons to change the chosen parameter. Press the ◀ button to stop adjusting a parameter and to return to navigating the OSD.
4. Press the **EXIT** button to exit out of the menu/OSD.

Remote Control Battery Installation

The remote control uses two AAA batteries (included), which should be replaced as needed.

To install the remote control batteries:

1. Locate the battery compartment on the back of the remote control.
2. Remove the cover from the back. To do this, push the cover in the direction indicated.
3. Remove the old batteries (if applicable).
4. Insert two new AAA batteries in the compartment as shown on the inside of the battery compartment. Make sure the batteries are correctly inserted, observing the proper polarity.
5. After installation, replace the cover and recycle the old batteries (if applicable).

Remote Control

The supplied remote control is used to operate the iScan Duo. The table below describes the function of the remote control buttons.

[1]	**POWER**	Always turns on the iScan Duo
[2]	**STANDBY**	Always puts the iScan Duo in standby mode
[3]	**P1-P4**	Reserved for future use

[4] **TEST PATTERNS**
ON/OFF : Turns Test Patterns On or Off
▶ : Selects the next test pattern
◀ : Selects the previous test pattern

[5] **OUTPUT SELECT**
AUDIO : Selects iScan Duo audio output (HMDI Video, HDMI Audio, Optical/Coax)
VIDEO : Selects iScan Duo video output (HDMI1, HDMI2)
PROFILES : Reserved for future use

[6] **SHIFT**
Press this button followed by ◀ ▶ ▲ ▼ buttons to move the input image

[7] **STRETCH**
Press this button followed by navigation ◀ ▶ buttons to stretch the input image horizontally or ▲ ▼ buttons is to stretch the input image vertically

[8] **16:9**
Sets the aspect ratio of the input image to 16:9 (Full Frame)

[9] **4:3**
Sets the aspect ratio of the input image to 4:3 (Full Frame)

[10] **ACTIVE**
Selects active format aspect ratio i.e. the actual aspect ratio of the content. For example, typical movie aspect ratios are 1.85:1 or 2.35:1

[11] **PRESETS**
Selects preset aspect ratios including 16:9 (Full Frame), 4:3 (Full Frame), 4:3 Letterbox and Panorama

[12] **MENU**
Use this button to access the on-screen main menu

[13] **EXIT**
Use this button to exit the current menu or the exit the on-screen menu

[14] **◀ ▶ ▲ ▼ ENTER**
Menu Navigation buttons. Press ENTER to confirm a selection or to enter a new menu

[15] **ZOOM ▲ ▼**
Use these buttons to magnify an input image while maintaining its aspect ratio

[16] **INFO**
Use this button and the navigation ◀ ▶ ▲ ▼ buttons to display useful information about the iScan Duo's status and settings

[17] **USER ▲ ▼**
Reserved for future use

[18] **Input Select buttons**
These buttons directly select the input on the iScan Duo.
Note: VIDEO 1 and **VIDEO 2** are multi-function buttons. They select Video 1 and Video 2 inputs respectively by default. However, if *RGBS* is selected through the on-screen menu, the video input function is disabled and the input becomes the sync (S) input for RGBS.
AUTO automatically selects an active input based on priority set by the user. *See Configuration Section under Input Priority on page 20.*

Installation Guidelines

The iScan Duo installation guidelines below ensure optimal performance.

Do . . .

- Install the iScan Duo on a solid, flat, level surface such as a table or shelf. You can also install the iScan Duo in a standard 19" equipment rack using the supplied rack-mount kit.
- Select a dry, well-ventilated location.
- Use only the included external power supply.
- Avoid excessive humidity, sudden temperature changes or temperature extremes.
- Use only accessories recommended by the manufacturer to avoid fire, shock or other hazards.
- Unplug your Duo before cleaning. Use a damp cloth for cleaning.

Don't . . .

- Stack the iScan Duo directly above heat-producing equipment such as power amplifiers or other components that generate heat during use.
- Expose the iScan Duo to high temperatures, humidity, steam, smoke, dampness, or excessive dust. Avoid installing the iScan Duo near radiators and other heat producing appliances.
- Install the iScan Duo near unshielded TV or FM antennas, cable TV decoders, and other RF -emitting devices that might cause interference.
- Place the iScan Duo on a thick rug or carpet or cover the iScan Duo with cloth. This might prevent proper cooling.
- Attempt to service this unit. Instead, disconnect it and contact your Authorized DVDO Reseller or contact DVDO directly.
- Open or remove unit panels or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also cause damage to your iScan Duo.

Front Panel Overview
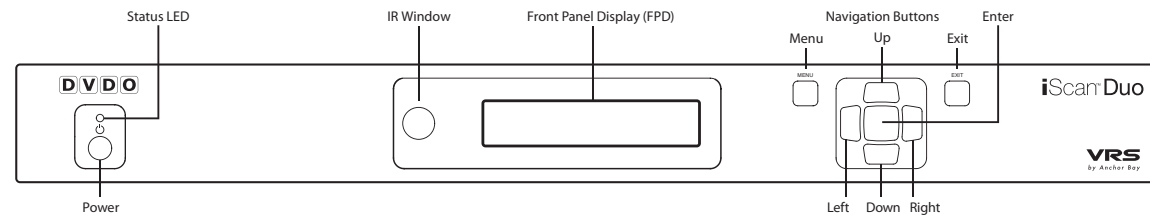
Status LED – This displays the current state of the iScan Duo

Off =	The unit is in standby mode
Red =	No signal detected
Blue =	The unit is processing the signal
Blinking Blue =	There is a problem with HDCP authentication
Green =	The unit detects an unsupported signal

Power Button – This toggles unit power between On and Standby.

IR Window – This is where all IR commands are received by the iScan. Do not obstruct this window.

Front Panel Display (FPD) – This is where all information from the on screen display (OSD) is duplicated to assist in the setup of your iScan.

NOTE: When navigating the Menu, the Front Panel Display (FPD) always shows the current selection on the bottom line and the menu/submenu item on the top line. When you change a value of a setting, the value is on the bottom line and the title of the parameter is on the top line.
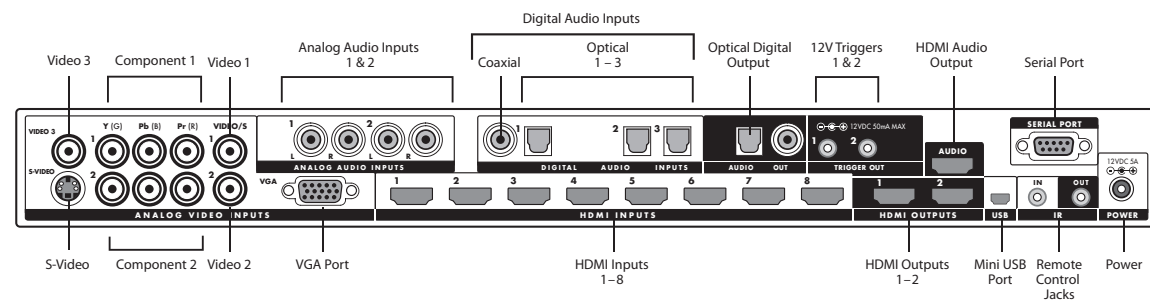
Navigation Buttons – These buttons are available on both the front panel and the remote control.

Back Panel Overview

Video Inputs

The iScan Duo has fifteen (15) video inputs. Most popular formats are supported on each input.

The formats, colorspace and bit-depth that the inputs support are as follows:
- Video 1, Video 2 and Video 3
  — Formats: NTSC, PAL, PAL-M and SECAM
- S-Video
  — Formats: NTSC, PAL, PAL-M and SECAM
- Component/RGBS 1 and Component/RGBS 2
  — Formats: 480i/p-60, 576i/p-50, 720p-50/60, 1080i-50/60, 1080p-50/60
  — Colorspace: YPbPr and RGB
  — In RGBS mode Video 1, Video 2 inputs are used as syncs
- VGA
  — Formats: VGA/SVGA/XGA/SXGA-60
  — Colorspace: RGBHV
- HDMI 1–8
  — Formats: 480i/p-60, 576i/p-50, 720p-50/60, 1080i-50/60, 1080p-24/25/30/50/60, VGA-60, SVGA-60, XGA-60, SXGA-60
  — Colorspace RGB/YCbCr 4:4:4/YCbCr 4:2:2
  — Bit-Depth: 8/10/12-bit processed

Video Outputs

The iScan Duo has two HDMI video outputs. The default output is HDMI 1. Select HDMI 2 output using **VIDEO** output button or the on-screen menu:

The HDMI digital video output can output the following signal types:
- RGB 4:4:4
- YCbCr 4:2:2
- YCbCr 4:4:4

To connect the iScan Duo to a display that has a DVI input, use either an HDMI-to-DVI cable or an adapter.

Audio Inputs

There are fourteen (14) audio inputs on the iScan Duo:
- Three (3) Optical Digital inputs
- One (1) Coaxial Digital inputs
- Two (2) Analog (L/R) inputs
- Eight (8) HDMI 1.3 inputs

While the digital and analog audio inputs can be assigned to any one of the video inputs, the HDMI audio inputs are tied directly to the HDMI video signal connected on the same input.

The iScan Duo accepts digital audio sourced from DVD players, satellite receivers, digital set top boxes, HD-DVD players, Blu-ray players, game consoles, and other video components with digital audio. These inputs are compatible with most consumer digital audio formats, including CD-Audio (44.1kHz/16 bit LPCM), Dolby Digital, and DTS. The coaxial digital audio inputs are compatible with any format with a sampling frequency between 24kHz and 192kHz, and with a data word structure up to 24 bits in length. The optical digital audio inputs are compatible with any format with a sampling frequency between 24kHz and 96kHz and with a data word structure up to 24 bits in length.

The HDMI audio inputs are compatible with all of the HDMI 1.3 audio formats.

Audio Outputs

The iScan Duo has 3 types of audio outputs.

- There are two discrete digital audio outputs, one coaxial and one optical. Both are active at the same time, with the selected input audio stream.

- The HDMI 1.3 audio only output for connection to an A/V Receiver.

- The HDMI 1.3 audio and video outputs for connection to displays.

12V Trigger Outputs

There are two 12-volt trigger ports each capable of supplying 50mA.

RS232 Serial Connection

This connection is used as an interface to control the iScan Duo with an automation system.

Power Supply Input

The iScan Duo comes with a 12V@5A AC-to-DC converter power supply, which accepts 100-240 VAC at 50/60Hz.

Mini USB Port

This connector is used for software updates using the supplied USB cable. The most current software version is available at **www.dvdo.com/duo**.

IR Remote Control Jacks

The IR Remote input and output jacks are used with an IR repeater.

Initial Setup

STEP 1 - Power Up

1. Attach the power cord to the external power supply.

2. Plug the power cord into a wall outlet or power conditioner, if applicable.

3. Plug the small connector attached to the cable that comes out of the power supply into the iScan. The iScan should power on and display 'iScan Duo / DVDO' on the Front Panel Display (FPD). If this does not happen, check all connections and verify that the power outlet does supply power with another device.

   IMPORTANT: Use only the power supply that comes with your iScan Duo, or a replacement procured directly from Anchor Bay.

STEP 2 - Connect the iScan Duo to the Display

Connect an iScan to a display with an HDMI or DVI input. The iScan Duo defaults to 'Auto Select' mode which automatically detects and outputs the display's preferred format.

Some displays may not indicate their native resolution as the preferred format.

To manually change the Output Resolution, press the **MENU** button on the remote and use the on-screen menu as shown.

Output Setup ➪ Video Format ➪ (Make Selection)

Useful Test Patterns:

Use the Test Patterns (ON/OFF, ◄ and ►) buttons on the remote for relevant test patterns below.

Frame Geometry (Adjusting for Overscan)

When this test pattern is displayed correctly, there should be a one-pixel wide white border around the edge of the screen: otherwise, the display is overscanning the signal from the iScan Duo. This is very common and is known for cutting off sports scores at the bottom of the screen. Use the 'Underscan' control to shrink the size of the output image so that you can see the white border. Press **MENU** button and use the on-screen menu as shown.

Output Setup ➪ Underscan ➪ (Adjust Value)

Checkerboard (Verifying if Display's Processing Can Be Bypassed)

When the checkerboard test pattern is displayed correctly, you should be able to see a 1-pixel checkerboard close-up. At the proper viewing distance the image should appear as an even gray. Otherwise, the resulting image does not look like a fine checkerboard and may have irregular patterns. When this is the case, the chosen output resolution may not be the native resolution of the display or the display may scale all input signals even if the input resolution is already at native resolution.

1. Verify that the iScan Duo's output resolution matches the display's preferred format.

2. Check to make sure that the display is in the correct Aspect Ratio mode, which may be causing the display to do additional unnecessary scaling. The correct mode may be called 'Native', 'Dot-by-Dot' or 'Full'.

   NOTE: If this test pattern does not appear as it should, and you have chosen the native resolution of the display, you may not be able to bypass the internal processing on the display. In these cases select the closest output format to the display's native resolution.

Vertical Lines

The 'Vertical Lines' test pattern should appear as one pixel wide black and white columns. If you see any irregular pattern(s) in the image, the display is scaling the signal horizontally.

Horizontal Lines

The 'Horizontal Lines' test pattern should appear as one pixel tall black and white rows. If you see any irregular pattern(s) in the image, the display is scaling the signal vertically.

STEP 3 - Connecting the Sources to the iScan Duo

Up to 15 video sources can be connected to the iScan Duo.

If your source has multiple video outputs, use HDMI/DVI if available; otherwise use Component (YPbPr) output. If Component is not available, use S-video. The (composite) video output is the lowest quality video output and should not be used unless no other video output is available. Similarly, use HDMI for audio if available; otherwise use Digital Optical or Coaxial. Finally, use Analog Stereo output.

STEP 4 - Configuring the Input Sources to Get Maximum Performance

The basic rule for getting the best performance from input sources is to configure the sources to output the native resolution of the content and to let the iScan Duo perform the video processing necessary to deliver the best image quality to the display.

For example, if the source is a DVD player, configure it to output standard definition (480i or 480p) and let the iScan Duo perform the up-conversion to deliver the high resolution image to the display. Similarly, if a set-top-box is receiving 1080i content, it would be best to configure it to output the same format to the iScan Duo. Some devices that can receive or playback multiple formats have a 'native' output mode where the output format is based on the content. Set these devices to 'native' when connected to the iScan Duo.

This section describes iScan Duo's On-Screen Menu which is activated when the user presses **MENU** on the remote or front panel.

Input Select

There are fifteen video inputs on the iScan Duo:

- VIDEO 1 - Composite Video/Sync
- VIDEO 2 - Composite Video/Sync
- VIDEO 3 - Composite Video/Sync
- S-VIDEO - S-Video or Y/C
- COMPONENT 1 - Component/RGBS 1
- COMPONENT 2 - Component/RGBS 2
- VGA - PC Input
- HDMI 1 - 8
- AUTO - Automatic active input detection and selection

These inputs can also be accessed using the direct access buttons on the remote

Output Select

This menu selects one of the iScan Duo's two HDMI video outputs

> **HDMI A/V 1**   Selects HDMI video output 1 (default)
> **HDMI A/V 2**   Selects HDMI video output 2

The HDMI video output selection can also be made using the **VIDEO** button on the Output Select section of the remote control. This button will toggle between the two HDMI video outputs. If there is only one display connected to the iScan Duo, it will not switch the video output.

Input Aspect Ratio

This menu controls the aspect ratio settings of the iScan Duo's inputs.

- **Picture (Aspect Ratio)**
  DVDs today are mostly encoded in 16:9 aspect ratio which is sometimes referred to as 'anamorphic' or 'enhanced for widescreen TV's'. Some older DVDs are encoded in 4:3 aspect ratio. Standard definition (SD) broadcasts, and older legacy SD content also have 4:3 picture aspect ratio. High definition (HD) content has 16:9 aspect ratio.

5:4 Set picture aspect ratio to 5:4

4:3 Set picture aspect ratio to 4:3

16:9 Set picture aspect ratio to 16:9

- **Active (Aspect Ratio)**

  This is aspect ratio of content or movie. For example, typical movie aspect ratios are 1.85:1 or 2.35:1.

  4:3 Set active aspect ratio to 16:9

  1.55:1 Set active aspect ratio to 1.55:1

  1.66:1 Set active aspect ratio to 1.66:1

  16:9 Set active aspect ratio to 16:9

  1.85:1 Set active aspect ratio to 1.55:1

  2.35:1 Set active aspect ratio to 2.35:1

  The iScan Duo scales the input image based on picture and active aspect ratio settings.

- **Stretch**

  Stretch gives you independent horizontal and vertical stretch control. The original aspect ratio is not maintained using this control. The *Stretch* control works differently from most other control screens. It uses ▲ and ▼ navigation buttons to stretch vertically and ◄ and ► buttons to stretch horizontally. The **ENTER** button takes you to the previous screen, or you can press the **EXIT** button on your remote to exit menus.

- **Shift**

  Shift allows you to move around on a zoomed or stretched image. As you move around, you expose parts of the picture that were not visible. *Shift* works only on a zoomed image. The controls work like *Stretch* described on the previous page.

  Use the ▲ and ▼ navigation buttons to move the image vertically and ◄ and ► buttons to move the image horizontally. The **ENTER** button takes you to the previous screen, or you can press the **EXIT** button on your remote to exit menus.

- **Auto AR**

  When *Auto AR* is enabled, the iScan Duo will set the input aspect ratio settings automatically. HDMI sources communicate this information to the iScan Duo. Certain formats also have pre-defined aspect ratios. For example, the (picture) aspect ratio of high-definition (HD) video formats is 16:9 while the (picture) aspect ratio of SXGA PC format is 5:4.

  When *Auto AR* is disabled, use Picture and Active aspect ratio menus to manually select the correct aspect ratio.

- **Zoom**

  The *Zoom* control allows you to magnify your picture while maintaining the aspect ratio of the input image. As the picture magnifies, the area around the the iScan Duos becomes invisible off the sides, top and bottom of your display.

  Use the ▲ and ▼ buttons on your remote to zoom up and down.

  In addition, the remote control has a ZOOM ▲ and a ZOOM ▼ button to quickly zoom an image.

- **Presets**

  Presets provides a short-cut to common aspect ratio settings.

  16:9 Full Frame

  Select this mode when both the picture aspect ratio and the active aspect ratio of the input image are 16:9. If the active aspect ratio is different, there will be black bars on the sides or on the top and bottom part of your display.

  4:3 Full Frame

  Select this mode when both the picture aspect and the active format aspect ratio of the input image are 4:3. For a 16:9 display there will be black bars on the left and right side of your display.

  4:3 Letterbox

  Select this mode when the picture aspect ratio is 4:3 but the active format aspect ratio of the input image has a 16:9 or larger aspect ratio. Some older DVDs are encoded in this manner. The iScan Duo will vertically stretch the input image to fill the screen.

  Panorama

  This mode is a variation of the 4:3 Full Frame mode. The iScan Duo stretches the input image to remove the black bars on both sides of the display. The middle part of the image is not stretched. Only the left and right side of the image are stretched.

  User Preset

  Custom aspect ratio settings including picture and active aspect ratios, zoom, stretch and shift functions will be saved in *User Preset*.

Input Adjust

This menu controls the settings on iScan Duo's inputs.

- **PReP**

  PReP™ is an exclusive VRS processing technology developed by Anchor Bay.

  Standard definition (SD) formats such as 480p, 576p were deinterlaced at some point before reaching iScan Duo. Deinterlacing is a complex processing technology that has a significant impact on image quality. The iScan Duo uses Anchor Bay's high performance VRS Precision Deinterlacing.

  High definition (HD) formats such as 1080p50 and 1080p60 are also frequently created by deinterlacing 1080i50 and 1080i60.

  PReP accepts one of the formats mentioned, and converts it back into an interlaced format. It can then be deinterlaced again using the VRS technology in iScan Duo, which usually results in a higher quality picture.

  The PReP control allows users to disable this function.

  480p/576p Use this menu to enable or disable PReP for 480p/576p formats

  1080p 50Hz/60Hz Use this menu to enable or disable PReP for 1080p50/60 formats

- **DeInterlacer**

  The deinterlacer control is relevant when the input is interlaced (480i, 576i, 1080i50 or 1080i60) or it is a deinterlaced format and PReP is enabled (480p, 576p, 1080p50 or 1080p60).

There are several deinterlacing modes available on the iScan Duo. This setting is saved on a "per input per SD and HD format" basis. The functions of these modes are described below:

Auto   This (default) mode represents the best balance between detection of film and video sources, bad edit detection, and identification of mixed-mode sources.

Film   This mode is intended for film-based content.

> **Auto** — Film-mode detection is automatic but biased towards film.

> **Forced 3:2** — This mode is intended to be used with 'high-quality' 24 fps film sources like Blu-ray discs. This forced cadence mode is useful for watching a movie from start to finish but less useful for lower quality content with bad edits or if you're going to be skipping around a lot between chapters.

> **Forced 2:2** — This mode is similar with Forced 3:2 but used with 50Hz video standards

> **2:2 Even** — This mode is similar with Forced 2:2 and should be used when Forced 2:2 mode does not lock to the 2:2 cadence in the movie. This mode weaves two adjacent fields together starting with an even field and combining it with the following odd field.

> **2:2 Odd** — This mode weaves two adjacent fields together starting with an odd field and combining it with the following even field. Either 2:2 Even or 2:2 Odd is correct for any given source. Try both of them and select the one which does not result in combing artifacts.

Video   This mode is intended for interlace video-based content.

● **Game Mode**

This mode is intended for use with game consoles (like those from Sony, Microsoft and Nintendo). It minimizes video processing delay through the iScan Duo. The total amount of delay is about half a frame of delay when the output frame rate is locked to the input frame rate. Unlocked frame rates may increase this delay.

● **Deep Color**

Deep Color mode allows the iScan Duo to accept 24-bit, 30-bit or 36-bit inputs from Deep Color HDMI sources. If *Deep Color* mode is turned off, the iScan Duo will not accept 30-bit or 36-bit inputs.

Note: Deep Color increases the bandwidth requirements of your HDMI interface. The HDMI interface may run as much as 50% faster, depending on the bit depth. For that reason, the Deep Color feature defaults to "disabled." You have to enable it through this menu.

If you have a failure, you will have to upgrade your HDMI cables, use shorter cables (in some cases), or disable the Deep Color feature.

● **Video Level**

Video Level refers to the dynamic range of the video signal. The video industry evolved levels that allowed for some guard band in the signal levels to account for overshoot or other signaling problems. The computer industry evolved levels that allocate the entire dynamic range possible for the image information.

The iScan Duo must accept signals from video components, such as DVD players, set top boxes, video recorders, which use <u>video</u> signal levels or PCs and game consoles, which may use <u>computer</u> signal levels. The *Video Level* in the **Input Adjust** menu gives you control over what signaling levels are used for inputs.

Auto   Sets the input signal level based on information provided by the HDMI source

Video   Sets the input signal level to video level

Computer   Sets the input signal level to computer level

● *Hot-Plug Source*

When *Hot-Plug Source* is enabled for an HDMI input, a signal on the HDMI input connector, called *Hot-Plug*, is toggled when switching to that input. Toggling *Hot-Plug* causes the source device and iScan Duo to perform an HDCP re-authentication. HDCP is a copy protection technology that is part of the HDMI standard.

Enable *Hot-Plug Source* if you experience problems switching to a particular source device. These problems include very slow switching with flashing on the display, or colored noise over the entire display

The only downside to enabling *Hot-Plug Source* is that switching could be a little slower due to the time it takes to re-authenticate.

Hot-Plug Source is grayed out if the selected input is not HDMI.

● *Audio Input*

If you have a non-HDMI input source device, you must associate (pair) the audio from that device with the video. The iScan Duo will then treat them as a pair when switching inputs, so that they switch together. When you choose an audio input on this menu, you are associating that audio input with the currently selected video input.

If your source device uses DVI for video output, and you are connecting to the iScan Duo using a DVI to HDMI adapter cable, you will have to connect audio via a separate cable and use this menu to associate the pair.

Select one of the audio sources below

> **HDMI** – This item is grayed out if the video input is not HDMI
> **Coax 1**
> **Optical 1**
> **Optical 2**
> **Optical 3**
> **Stereo 1**
> **Stereo 2**

● *Audio Delay*

The iScan Duo automatically delays audio to match the video processing delay to prevent A/V Lip-sync issues. The user can also manually adjust the audio delay using the navigation ▼ button to decrease the delay and ▲ button to increase the delay (in msec).

Picture Controls

Picture Controls let you make adjustments to your picture and apply to the currently selected input. The settings are independently adjustable for every video input. The Brightness, Contrast, Color Saturation, Hue (Tint), Detail Enhancement and Edge Enhancement controls are in the form of a slider-bar. Use the ▲▼ navigation buttons to increase and decrease values.

The Picture Controls settings are briefly described below:

- **Brightness**

  Adjust the black level of the overall image from the iScan Duo. When you make an adjustment to brightness, all levels of brightness, from black to peak white, are shifted up or down.

  The Brightness control is complimentary to the *Contrast* control which will be described next. Contrast adjusts the level of white.

- **Contrast**

  Video contrast works by adjusting the level of white. *Contrast* is complimentary to the *Brightness* control. *Contrast* controls should be used carefully because if overly adjusted, some details in lighter areas can become less visible.

- **Color Saturation**

  Color Saturation refers to the mix of "color" vs. "brightness" in the picture. Increasing *Color Saturation* makes colors look more vivid. Decreasing *Color Saturation* makes colors look "washed out." Changes to either *Brightness* or *Contrast* can change your Color Saturation. You can use this control to balance the mix of color verses brightness.

- **Hue (Tint)**

  The changes made with a Hue control effect what most people would refer to as "color." Hue controls cause a shift in color spectra. Sometimes this control is called "Tint". Hue changes color without changing Luminance (picture brightness) or color saturation.

- **Detail Enhancement**

  Increase *Detail Enhancement* to enhance or sharpen the fine details in an image such as grass or the texture of a plaster wall.
  Decrease *Detail Enhancement* to reduce noise in a noisy image.

- **Edge Enhancement**

  Increase *Edge Enhancement* to sharpen object edges in an image.
  Decrease *Edge Enhancement* to soften object edges in an image.

- **Mosquito NR**

  The term "noise" in the context of video images refers to unwanted or unnatural looking elements that find their way into video signals. "Mosquito Noise" is a particular type of image noise that is caused by video compression processing. Video compression is common for all types of transmitted video, including cable, satellite, and over-the-air broadcasts. Compression is also used with DVD and other prerecorded media. The visibility of Mosquito Noise will vary. In some cases, it can become objectionable. Mosquito Noise will be more obvious in standard definition video, although it is sometimes present in high definition video.

  The iScan Duo's *Mosquito NR* feature removes mosquito noise present in an image. There are three controls.

  Off   No noise reduction is applied. This is the normal setting for a good quality image.
  On-Low   Used when there is a small amount of mosquito noise present in the image.
  On-High Used when there is significant amount of mosquito noise present in the image.

  Mosquito NR should only be enabled when there is noise in an image since it will remove details in a good image.

Output Setup

The Output Setup menu lets you set up the iScan Duo's many output features. The menus are listed below.

- **Test Patterns**

  There are 35 test patterns available for advanced users and calibration professionals. These patterns automatically resize and use the correct colorimetry for the current output format. Test patterns are useful to calibrate your home theater setup.

  The iScan Duo remote has a group of buttons labeled **TEST PATTERNS** to turn test patterns on/off and to navigate through the list of available test patterns.

- **Video Format**

  All DVI and HDMI displays have an Extended Display Identification Data (EDID), which contains information about the display's capability. This information which includes the display's "preferred format" can be read by iScan Duo over the HDMI or DVI cable. In **Auto Select** mode (iScan Duo's default mode), the iScan Duo will automatically self-configure its output to the display's preferred format. It is possible that the display's preferred format is not on the list of standard formats shown on the *Video Format* menu listed below.

  Use the **INFO** button on the remote or the Information screen in the menu to see the current output format.

  If you prefer not to use **Auto Select**, you can choose one of the standard formats from the list on the *Video Format* menu

  List of formats in the *Video Format* menu
  Auto Select – this is the default setting
  VGA 60Hz
  480p 60Hz
  720p 60Hz
  1080i 60Hz
  1080p 60Hz
  576p 50Hz
  720p 50Hz
  1080i 50Hz
  1080p 50Hz
  1080p 24Hz
  1080p 25Hz
  SVGA 60Hz
  XGA 60Hz
  SXGA 60Hz

  If the output format changes, the iScan Duo tests to insure that your display can accept the new format. You have about 30 seconds to verify that you see the new format by moving the highlight bar to "Yes" then "OK." If you don't verify the new format, the iScan Duo will revert to the previous format.

- **Underscan**

  Some displays will overscan the picture, which means that the edges of the picture are outside the frame of the viewable area. The *Underscan* slider-bar control lets you shrink the picture, so that you can see all of it, and adjust for over-scanning.

  Underscan is a display control. It is fixed regardless of which input is selected.

- **1:1 Frame Rate**

  Disabled The output frame rate from the iScan Duo is fixed.

  Enabled The output frame rate from the iScan Duo tracks the input frame rate. This avoids performing frame rate conversion, which can result in stuttering motion in some cases.

  The *1:1 Frame Rate* feature is useful when you need to display video from both 60Hz and 50Hz sources, as long as your video display can operate at both frame rates. Some video sources, such as Blu-ray players, can output 24Hz video. If you have a 24Hz source and your display can also accept 24Hz, enabling 1:1 Frame Rate will allow the 24Hz video to pass through the iScan Duo from source to display.

- **Frame Lock**

  Auto Lock The output frame rate from the iScan Duo is fixed and locks to the input when possible.

  Unlock The output frame rate from the iScan Duo is fixed and not locked to the input.

  Frame Lock provides more options for handling input and output frame rate and timing variations. In some cases, this feature may provide smoother operation when switching input sources or formats.

- **Aspect Ratio**

  Aspect Ratio sets the display aspect ratio. If you have an HDMI display, **Auto** (default) is the safe choice.

  Auto The iScan Duo outputs the preferred aspect ratio reported by the display.

  16:9 Sets the display aspect ratio to 16:9

  4:3 Sets the display aspect ratio to 4:3

- **Color Space**

  Color Space provides four choices for output color space. If you are unsure what to use, **Auto** (default) is the safe choice.

  Auto The iScan Duo outputs the preferred color space reported by the display.

  RGB Red, Green, Blue color space standard using 8 bits per color.

  YCbCr 4:4:4 Component color space used for video standards; 8 bits per component.

  YCbCr 4:2:2 Component color space used for video standards: 10 bits per component.

- **Colorimetry**

  Colorimetry refers to the standards by which RGB is converted to YCbCr. There are two standards for performing this conversion:

  ITU BT .601: This is the colorimetry standard for Standard Definition video formats.
  ITU BT .709: This is the colorimetry standard for High Definition video formats.

  Auto The iScan Duo outputs the colorimetry standard reported by the display.

  ITU BT.601 The iScan Duo outputs BT.601 standard

  ITU BT.709 The iScan Duo outputs BT.709 standard

- **Video Level**

  This control is similar to the Video Level control in the **Input Adjust** menu but applies to the iScan Duo's output.

  Auto The iScan Duo outputs the video level reported by the display.

  Video The iScan Duo outputs 'video' signal level to the display.

  Computer The iScan Duo outputs 'computer' signal level to the display.

- **Deep Color**

  The iScan Duo supports Deep Color displays. These displays support 30-bit or 36-bit inputs. If the display connected to the iScan Duo supports Deep Color, the iScan Duo's output can be configured as follows.

  Off The iScan Duo will not output Deep Color format (default mode).

  Auto The iScan Duo will output the display's preferred Deep Color format.

  30-bit The Scan Duo will output 30-bit Deep Color format.

  36-bit The Scan Duo will output 36-bit Deep Color format.

- **Audio Output**

  The iScan Duo can output audio on one of the following connectors: HDMI Video 1, HDMI Video 2, HDMI Audio, Optical.

  Auto Select The iScan Duo will automatically route audio to an audio output. The choice of output depends on what components are connected to the outputs and powered up.

  Video HDMI Use this setting if you want to send audio to your video display's speakers.

  Audio HDMI Use this setting if you have an AV Receiver with an HDMI input.

  Optical Use this setting if you have an AV Receiver without HDMI inputs.

The table below shows the connector choice for audio when **Auto Select** is chosen.

Output Connector	Conditions
Audio HDMI	A/V Receiver with HDMI inputs is connected to the Audio HDMI port.
Video HDMI	HDMI Display has audio capability (reported via the EDID).
	No A/V Receiver is connected to the Audio HDMI port, or an AV Receiver is connected but powered off.
Optical	Display does not have audio capability (reported via the EDID).
	No A/V Receiver is connected to the Audio HDMI port, or it is powered off.

Configuration

This menu provides system level controls of the iScan Duo

- **Input Priority**

  Input Priority selects which input to use when multiple inputs are active at the same time and **Input Select** is set to **Auto**. The selection is based on priority.

  To change priority of selection with the remote control:

  Use the navigation ▲ and ▼ buttons to move to input you want to change
  Press **ENTER** to select the input
  Use the navigation ▲ and ▼ buttons to move the input to the desired priority
  Press **ENTER** again to choose another input

- **Rename Inputs**

  The *Rename Inputs* feature lets you customize your setup. The names you enter will appear in the **Select Input** menu.

  Select the input you want to rename with the remote control **ENTER** button.
  Use the navigation ◀,▲,▼,▶ buttons to move the highlighted character around on the keyboard.

ENTER	puts the selected character in the edit bar.
Cancel	exits the window with no changes.
Finish	exits the window and applies the new name.

- **Auto Wake Up**

  Auto Wake Up provides more control over the conditions in which the iScan Duo will automatically power on. The *Auto Wake Up* window gives you 3 options for defining the conditions in which the iScan Duo will power itself on:

  Off The iScan Duo will power on using the remote. Use this option if you want the iScan Duo to remain powered down even if input signals become active.

  Mode 1 The iScan Duo will power on automatically only if it powered down automatically.

  If an input becomes inactive, the iScan Duo will automatically power itself off. If the input becomes active again, the iScan Duo will automatically power on. If the iScan Duo is powered down with the remote, then *Auto Wake Up* is turned off.

  Mode 2 The iScan Duo will always automatically power on whenever an input signal is present on any input.

- **Auto Standby**

  Auto Standby gives you control over the conditions in which the iScan will power itself down.

  Off The iScan Duo never goes into standby mode. This is useful in cases where you may not have an active video signal, but you may have an active audio signal passing through the iScan Duo.

  On The iScan Duo goes into standby mode after a brief interval when there is no active input.

- **Component Inputs**

  The *Component Inputs* menu gives you 3 options for controlling Automatic Gain Control on Analog Component (YPbPr) Inputs:

  Single Sync This is the default setting. Most component inputs will have sync only on the Y signal.

  Triple Sync A few devices will add sync to all three component input signals (Y, Pb, Pr). If you know your device does this, choose this mode.

  AGC Disable In some cases, Automatic Gain Control (AGC) will cause brightness levels to be incorrect due to distortions in the analog input signals. Disabling AGC may correct this problem.

  In general, you should use Single Sync. If your picture does not look correct, experiment with the other settings.

- **Select RGBS**

  The menu allows you to assign one of the iScan Duo's two component inputs to RGBS format, which is available with the SCART connector. The SCART connector is used widely in countries with PAL/SECAM video standards.

  Select **Component 1** or **Component 2** to select the input

 Select **Enable** to assign the selected input to RGBS format.

  Note: When the RGBS mode is selected, the Y Pb Pr connectors are mapped to G B R. The Video input connector next to the Y Pb Pr connector becomes the 'S' input. In other words, when RGBS mode is selected, one of the Composite Video inputs becomes unavailable.

  For example,

  Component 1 input – RGBS mode disabled

  Y   Pb   Pr   Video 1
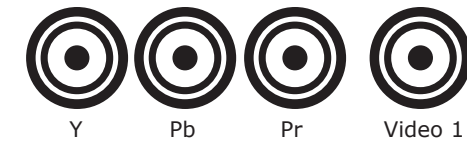
  Component 1 input – RGBS mode enabled

  G   B   R   Sync
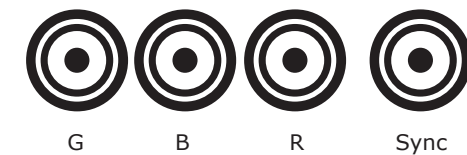
- **LED Brightness**

  This menu controls the brightness of the power LED and Front Panel Display (FPD). There are 4 levels of control. '0' turns off both LED and FPD. '3' gives the maximum brightness off both LED and FPD.

- **Factory Defaults**

  Factory Defaults is a quick way to "undo" any settings that have been made, and restore the iScan Duo's original default settings.

Video Output	Restores video format setting to Auto. In Auto mode, the iScan Duo will automatically communicate with your display and output your display's preferred format.
Picture Controls	Restores default settings to Picture Controls menu items
Input Names	Restores default names for video inputs.
All Defaults	Restores all defaults.

- **Update Firmware**

  Update Firmware is used when you want to update the iScan Duo's firmware.
  Steps to update firmware:
  — Download the new firmware ('.zip' file) from DVDO website.
  — Unzip to file to extract the new firmware with a '.abt' extension.
  — Note its location on your PC hard-drive.
  — Use mini-USB to USB cable supplied with the iScan Duo.
  — Plug the smaller connector on the cable to the mini-USB port at the back of the iScan Duo.
  — Plug the larger connector to your PC.
  — Select **YES** to confirm that you want to update firmware.

— An iScan Duo icon should appear on your PC's desktop. The iScan Duo looks like a mass storage device to your PC.
— Double click on the iScan Duo icon. You should see a file with a '.abt' extension. Select that file and delete it.
— Copy the new '.abt' file into the iScan Duo icon.
— After the file has been copied, the iScan Duo will automatically update its firmware and indicate progress on the Front Panel Display.

IMPORTANT: Make sure the file you are copying to the iScan Duo has a '.abt' extension.

- ● ***Serial Port Rate***

  The serial port is used by automation system controllers to control the iScan Duo. The serial port baud rate defaults to 19200 bps, but can be changed using the navigation ▲ or ▼ buttons on the remote control.

  The supported baud rates are:

  4800 bps (4.8K)
  9600 bps (9.6K)
  14400 bps (14.4K)
  19200 bps (19.2K) - default
  38400 bps (38.4K)
  115200 bps (115.2K)

Wizard Launch

The iScan Duo features two 'Wizards' to guide you through setup of your display, A/V receivers and input devices.

- ● ***Display Wizard***

  The **Display Wizard** assists setup of your display and audio.

  Using Display Wizard, you can:

  1. Name your display.
  2. Select an output video format.
  3. Select an output connector for audio.

  If you don't want to change anything, press ◄ to Exit the Wizard.

  Changing the **Display Name**:

  Press **ENTER** or ▶ if you want to change the name of your display.
  Use this on-screen keyboard to rename your display with the navigation remote buttons. When you are finished, highlight Finish then press OK to accept the new name. If you want to exit the keyboard screen with no changes, highlight Cancel, then press OK.

  Changing the **Output Format**:

  Press **ENTER** or ▶ if you want to change the output format.
  This takes you to the Output Format menu. Refer to the Output Format section.

  Changing the **Audio Output**:

  Press **ENTER** or ▶ if you want to change the audio output.
  This takes you to the Audio Output menu. Refer to the Audio Output section.

Press **EXIT** to exit the **Display Wizard**

- ● ***Input Wizard***

  The **Input Wizard** guides you through the setup of your input components. You can run the **Input Wizard** for every input component.

  Using the **Input Wizard**, you may:

  1. Rename an input component.
  2. Set an Input Priority for the component.
  3. Associate an Audio Input with the video input.

  Changing the **Input Priority**:

  Press **ENTER** or ▶ if you want to reassign the priority of the input for Auto input selection. This takes you to the Input Priority menu. Refer to the Input Priority section.
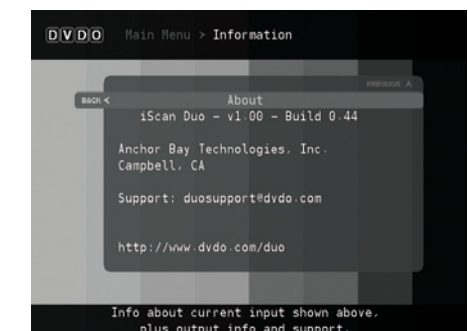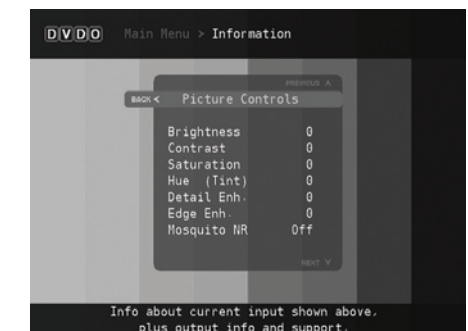
  Changing the **Associated Aud(io)**:

  Press **ENTER** or ▶ if you want to associate an audio input with the video input. This takes you to the Audio Input menu. Refer to the Audio Input section.

Press **EXIT** to exit the Input Wizard

Information

The iScan Duo has several 'Info' screens which contain important information to assist with trouble-shooting. The screens are shown below.

Use the navigation ▼, ▲ buttons to display the pages.
Use **EXIT** or ◄ button to exit the Information menu.