iScan™ VP50

HIGH-DEFINITION VIDEO PROCESSOR & HUB

Powered by ABT

OWNER'S MANUAL

DVDO BY ANCHOR BAY TECHNOLOGIES, INC.
LIMITED WARRANTY
WARRANTY VALID ONLY IN THE U.S.A.

iScan™

WARRANTY

DVDO by Anchor Bay Technologies, Inc. (DVDO) warrants that products distributed in the U.S.A. that fail to function properly under normal use due to a manufacturing defect when installed and operated according to the owner's manual enclosed with the unit will be repaired or replaced with a unit of comparable value, at the option of DVDO, without charge to you for parts or actual repair work. Parts supplied under this warranty may be new or rebuilt at the option of DVDO.

THIS LIMITED WARRANTY APPLIES TO THE ORIGINAL OWNER OF THIS DVDO PRODUCT DURING THE WARRANTY PERIOD PROVIDED THE PRODUCT WAS PURCHASED FROM AN AUTHORIZED DVDO DISTRIBUTOR/DEALER IN THE U.S.A. YOU WILL BE REQUIRED TO PROVIDE A SALES RECEIPT OR OTHER VALID PROOF OF PURCHASE SHOWING THE DATE OF ORIGINAL PURCHASE. IN THE EVENT SERVICE IS REQUIRED, THE PRODUCT MUST BE DELIVERED WITHIN THE WARRANTY PERIOD, TRANSPORTATION PREPAID, ONLY FROM WITHIN THE U.S.A. AS EXPLAINED IN THIS DOCUMENT. YOU WILL BE RESPONSIBLE FOR REMOVAL AND INSTALLATION OF THE PRODUCT. DVDO WILL PAY TO RETURN THE REPAIRED OR REPLACEMENT PRODUCT TO YOU WITHIN THE U.S.A.

PRODUCT WARRANTY PERIOD	**Parts**	**Labor**
iScan Video Processors	**1 Year**	**1 Year**

Shorter periods may apply to some products. Please refer to the limited warranty document enclosed with your specific product for a definitive statement of the warranty period.
The warranty period for retail customers who rent the product commences upon the date product is first put into use (a) during the rental period or (b) retail sale, whichever occurs first.

WHAT IS NOT COVERED

IF THIS PRODUCT WAS PURCHASED FROM AN UNAUTHORIZED DEALER OR DISTRIBUTOR, THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND THIS PRODUCT IS SOLD STRICTLY "AS IS" AND "WITH ALL FAULTS".

DVDO SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL AND/OR INCIDENTAL DAMAGES.

THIS WARRANTY DOES NOT APPLY IF THE PRODUCT HAS BEEN SUBJECTED TO POWER IN EXCESS OF ITS PUBLISHED POWER RATING. THIS WARRANTY DOES NOT COVER THE CABINET OR ANY APPEARANCE ITEM, ANY DAMAGE TO RECORDING TAPES OR DISCS, TELEVISION OR DISPLAY SCREENS DAMAGED BY STATIC, NON-MOVING, IMAGES APPLIED FOR LENGTHY PERIODS (BURN-IN), ANY DAMAGE TO THE PRODUCT RESULTING FROM ALTERATIONS, MODIFICATIONS NOT AUTHORIZED IN WRITING BY DVDO, ACCIDENT, MISUSE OR ABUSE, DAMAGE DUE TO LIGHTNING OR TO POWER SURGES, SUBSEQUENT DAMAGE FROM LEAKING, DAMAGE FROM INOPERATIVE BATTERIES, OR THE USE OF BATTERIES NOT CONFORMING TO THOSE SPECIFIED IN THE OWNER'S MANUAL.

THIS WARRANTY DOES NOT COVER THE COST OF PARTS OR LABOR WHICH WOULD BE OTHERWISE PROVIDED WITHOUT CHARGE UNDER THIS WARRANTY OBTAINED FROM ANY SOURCE OTHER THAN A DVDO AUTHORIZED SERVICE COMPANY OR OTHER DESIGNATED LOCATION. THIS WARRANTY DOES NOT COVER DEFECTS OR DAMAGE CAUSED BY THE USE OF UNAUTHORIZED PARTS OR LABOR OR FROM IMPROPER MAINTENANCE.

ALTERED, DEFACED, OR REMOVED SERIAL NUMBERS VOID THIS ENTIRE WARRANTY.

NO OTHER WARRANTIES

DVDO LIMITS ITS OBLIGATIONS UNDER ANY IMPLIED WARRANTIES INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, TO A PERIOD NOT TO EXCEED THE WARRANTY PERIOD. NO WARRANTIES SHALL APPLY AFTER THE WARRANTY PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS AND SOME STATES DO NOT ALLOW THE EXCLUSIONS OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

TO OBTAIN SERVICE

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, MS 131
CAMPBELL, CALIFORNIA 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

TABLE OF CONTENTS

Introduction

Thank you for purchasing the DVDO iScan VP50 Video Processor, brought to you by Anchor Bay Technologies, Inc. We are especially pleased to bring you ABT's new VRS Precision DeinterIacing for both high definition and standard definition content along with ABT's proven VRS Precision Video Scaling II technology. These technologies enable precision upconversion of standard and high definition (480i/p, 576i/p, 720p or 1080i/p) video sources and content to the native or optimum resolution of your display. Available output resolutions span from VGA up to 1080p, including the standard HDTV resolutions of 720p and 1080i.

In addition to our own award winning video processing technologies, the iScan VP50 also offers a host of other innovative features, including:

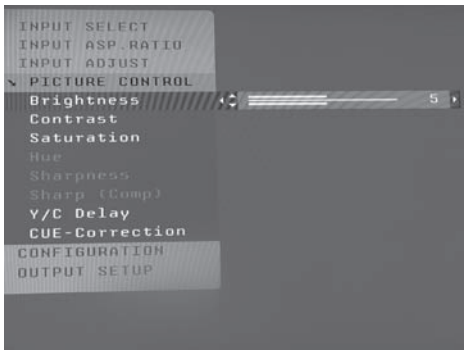
- 4 HDMI (High Definition Multimedia Interface) Inputs and 1 HDMI Output
- Analog Input and Output, using BNC-style Connectors
- Precision AV LipSync™
- AutoCUE-C™ - Automatic Chroma Upsampling Error Correction
- RightRate™ - Fully Programmable Framerate Conversion
- Precision Gamma Correction™
- Flexible Digital and Analog Audio Switching
- Timebase Correction
- Input and Output Aspect Ratio Controls
- Flexible Zoom and Pan Controls
- SDI Input Capability (optional, DVDO P/N SDI-601A)

This Owner's Manual can help you set up your new iScan VP50, and give you the information to properly set it up with your sources and display. It can also show you how to properly connect it and use it with the other components in your system.

Document Conventions and Menu Navigation

In this Owner's Manual, text that is in 'quotes' refers to an item in the iScan VP50's on screen display (OSD). For example, if the user were asked to access the 'Deinterlacing' menu on the VP50, the word deinterlacing is in quotes so that the user knows what to look for in the OSD. Text that is **bold** refers to a button on the remote control of the VP50. For example an instruction that says to 'press ▶' is telling the user to press the right navigational button on the remote control (or alternatively, the front panel). Text that is in *italics* refers to instructions where information can be found elsewhere. For example, you may be referred to another section of the manual or to a specific page on the DVDO website.

In this Owner's Manual, an action that requires navigating the menu system of the iScan VP50 is referred to in the following abbreviated form:



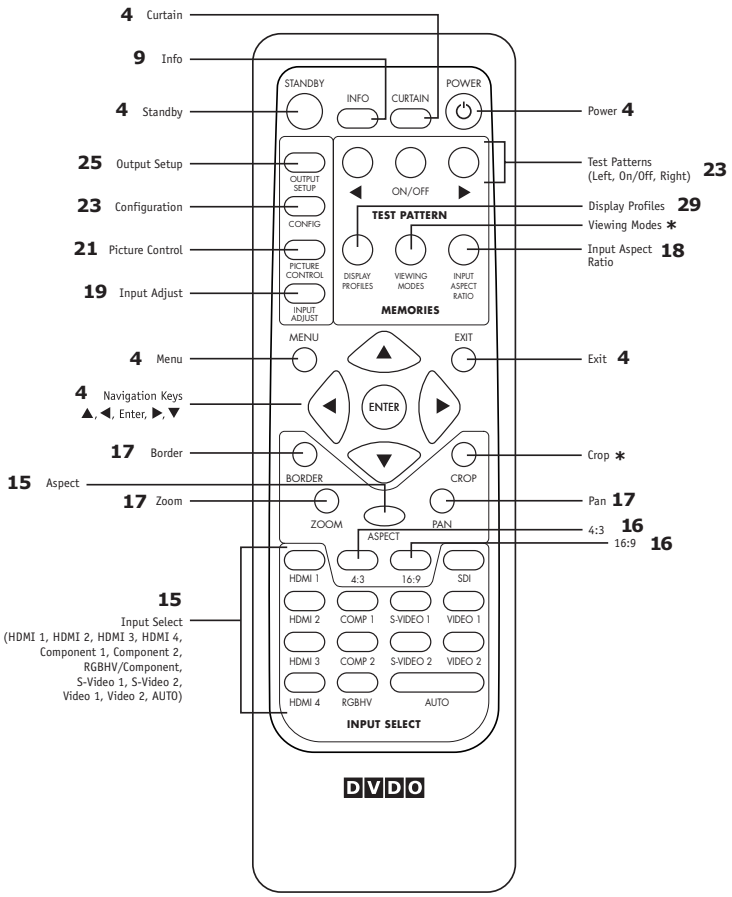
Picture Control ⇨ Contrast ⇨ 5

In this example, the instructions are to adjust the 'Contrast' to a value of '5'. To do this, press **Picture Control** and then press ▼ once, highlighting 'Contrast' in the On Screen Display (OSD) or if you are looking at the front panel display (FPD) you will see 'Picture Control' on the top line and 'Contrast' on the bottom line. This is abbreviated as 'Picture Control / Contrast'. Next press ▶ to adjust the setting and then press ▲ until the value is '5'. Finally, press **Exit**.

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

Remote Control Overview

For additional information about the functions of these buttons, turn to the pages given in parentheses ( ).



An asterisk (*) indicates this feature will be implemented in future software.

Power/Standby Buttons
The iScan VP50 remote has a **Power** and a **Standby** button. The **Power** button always turns the iScan VP50 on and the **Standby** button always put the unit into Standby mode.

Curtain Button
The iScan VP50 remote has a **Curtain** button which allows you to close a 'curtain' over the image. This feature is especially useful when an image is paused on a display susceptible to burn-in, like a plasma or CRT-based display.

Remote Control Battery Installation

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

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, press the tab attached to the cover and pull the cover with the guide on the back of the remote control.
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 dispose of the old batteries (if applicable).

Menu Navigation
You can control the iScan VP50 as follows:

- From the front panel controls
- From the iScan VP50 remote control
- From a programmed universal remote control
- Using the serial connection on the back panel

The menu navigation controls on the remote control are duplicated on the front panel of the iScan VP50.

To navigate the menu:

1. Press the **Menu** button.
2. Use the directional 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

Unpacking and Inspection

Please verify that your iScan VP50 carton contains the following items:

- iScan VP50 Video Processor
- Universal 6V@7A AC-to-DC Power Converter
- US IEC Power Cord (International Customers, consult your local authorized DVDO reseller)
- Remote Control
- iScan VP50 Owner's Manual
- iScan VP50 Quick Start Guide

- Serial Cable for Software Updates and Automation (1:1)
- VRS Optimization & Evaluation DVD
- DVDO Software CD

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

The iScan VP50 uses BNC-style analog connectors and an HDMI digital connector to provide video output signals. You must purchase a cable or adapters to connect this output to your display. Different displays have different input connectors, so check your display specifications to ensure compatibility.

Both input and output cables can be supplied by your Authorized DVDO Reseller. To find your nearest Authorized DVDO Reseller, go to **www.dvdo.com/res/index.html.** There are also a wide selection of cables and adapters available on our website at **www.dvdo.com/pro/pro_acc.html**.

Display Compatibility Requirements

DVDO iScan video processing products are compatible with a wide range of displays. These include digital TVs, projectors, and flat panel displays, as well as other emerging technologies that can support 480p or higher resolution video signals. To determine if your display is compatible with the DVDO iScan VP50, look to see if it has one of the digital inputs listed below. If not, then your display may only have analog High Definition inputs or it is probably limited to receiving a standard NTSC, PAL or SECAM interlaced signal and will not function correctly with iScan VP50.

Digital Inputs

HDMI input

DVI-D input

Analog Inputs

VGA HD-15 input

5 BNC RGBHV inputs

Component input (YPbPr or YCbCr)

Component input that are not capable of accepting a 480p signal should be labeled '480i' (NTSC) or '576i' (PAL/SECAM).

The following types of displays with digital video inputs should be compatible with the iScan VP50 since a large majority of them can support higher resolution signals:

- Plasma displays
- LCD-based flat panel and front & rear projection displays
- DLP-based front & rear projection displays
- LCoS-based front & rear projection displays (D-ILA™ & SXRD™ included)
- CRT-based Direct View and front and rear projection displays

Installation Guidelines

Take special care with the iScan VP50 installation to ensure optimal performance. Pay particular attention to the bulleted items that begin below and to other precautions that appear throughout this guide.

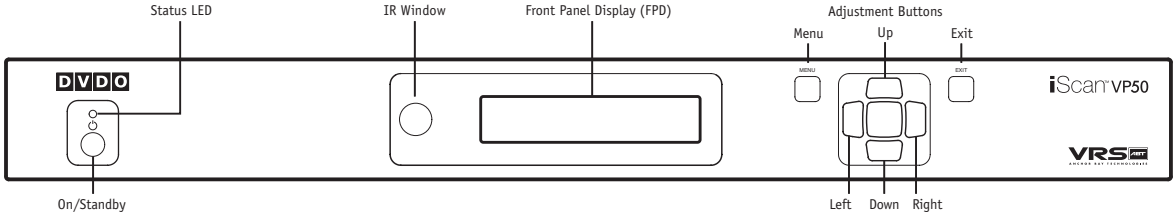
Do . . .

- Install the iScan VP50 on a solid, flat, level surface such as a table or shelf. You can also install the iScan VP50 in a standard 19" equipment rack using an optional rack-mount kit available from authorized DVDO resellers or directly from DVDO.
- 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 iScan VP before cleaning. Use a damp cloth for cleaning.

Don't . . .

- Install the iScan VP50 on an unstable surface or one that is unable to support all four of its feet, unless it is installed in an equipment rack.
- Stack the iScan VP50 directly above heat-producing equipment such as power amplifiers or other components that generate heat during use.
- Expose the iScan VP50 to a high temperatures, humidity, steam, smoke, dampness, or excessive dust. Avoid installing the iScan VP50 near radiators and other heat producing appliances.
- Install the iScan VP50 near unshielded TV or FM antennas, cable TV decoders, and other RF-emitting devices that might cause interference.
- Place the iScan VP50 on a thick rug or carpet or cover the iScan VP50 with cloth. This might prevent proper cooling.
- Attempt to service this unit. Instead, disconnect it and contact your Authorized DVDO Reseller or contact Anchor Bay Technologies 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 VP50.
- Obstruct the front panel IR receiver window shown in "Remote Control Overview".
- Do not attempt to use the remote control out of line of sight with the IR receiver. Doing so will cause improper operation.

Front Panel Overview



Status LED – This displays the current state of the iScan VP50

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

On/Standby – 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.

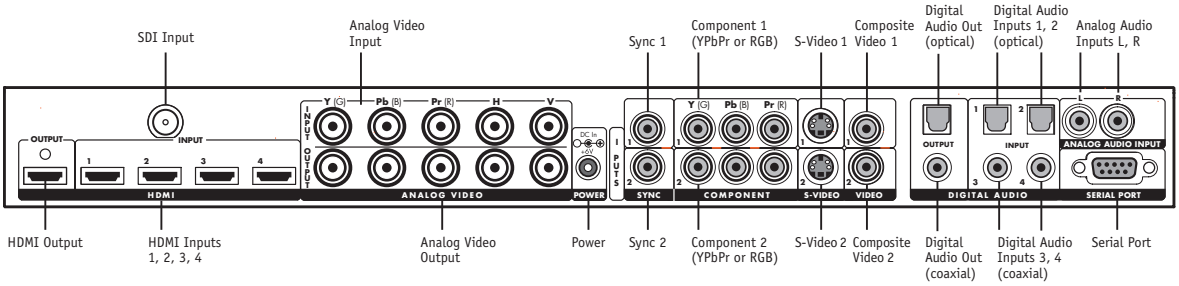
Front Panel Display (FPD) – This is where all information from the on screen display (OSD) is duplicated to assist in the setup of your iScan.

NOTE: When navigating the OSD, the 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 Keys – These keys are duplicated on the remote control and function exactly the same.

NOTE: Switching Inputs using the Navigation keys – You can switch inputs on the front panel of the iScan VP50 or using the remote using the navigation keys. To do this, press the ▲ or ▼ without pressing the **Menu** button first.

Rear Panel Overview



Video Inputs

The iScan VP50 has eleven (11) video inputs and an optional SD-SDI input available (P/N SDI-601A). The inputs and the formats they support are as follows:

- Video 1 (NTSC, PAL, PAL-M and SECAM)
- Video 2 (NTSC, PAL, PAL-M and SECAM)
- S-Video 1 (NTSC, PAL, PAL-M and SECAM)
- S-Video 2 (NTSC, PAL, PAL-M and SECAM)
- Component/RGBS 1 (480i/p@60Hz, 576i/p@50Hz, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz)
- Component/RGBS 2 (480i/p@60Hz, 576i/p@50Hz, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz)
- RGBHV/Component (480p@60Hz, 576p@50Hz, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, VGA/SVGA/XGA/SXGA@60Hz
- HDMI 1 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, 1080p@50Hz, 1080p@60Hz, VGA/SVGA/XGA/SXGA@60Hz RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2)
- HDMI 2 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, 1080p@50Hz, 1080p@60Hz, VGA/SVGA/XGA/SXGA@60Hz RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2)
- HDMI 3 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, 1080p@50Hz, 1080p@60Hz, VGA/SVGA/XGA/SXGA@60Hz RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2)
- HDMI 4 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, 1080p@50Hz, 1080p@60Hz, VGA/SVGA/XGA/SXGA@60Hz RGB 4:4:4/YCbCr 4:4:4/YCbCr 4:2:2)

With the DVDO SDI Input Module installed, you will also be able to access the SDI input.

- SDI (480i@60Hz and 576i@50Hz YCbCr 4:2:2)

Video Outputs

The iScan VP50 has two video outputs, one analog and one digital. The analog output on the iScan VP50 can output the following signal types:

- YPbPr (Component)
- RGBHV
- RGsB
- RGBS

The HDMI digital video output can output the following signal types:

- RGB 4:4:4 (8-bit, DVI standard)
- YCbCr 4:2:2 (10-bit)
- YCbCr 4:4:4 (8-bit)

To connect the iScan VP50 to a display that has a DVI input, use either an HDMI-to-DVI cable or an adapter.

Audio Inputs

There are nine (9) audio inputs on the iScan VP50:

- Two (2) Optical Digital inputs
- Two (2) Coaxial Digital inputs
- One (1) Analog (L/R) input
- Four (4) HDMI 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 VP50 accepts digital audio sourced from DVD players, satellite receivers, digital set top boxes, HD-DVD players, BluRay players, game consoles, and other digital audio devices. 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 HDMI 1.1 audio formats.

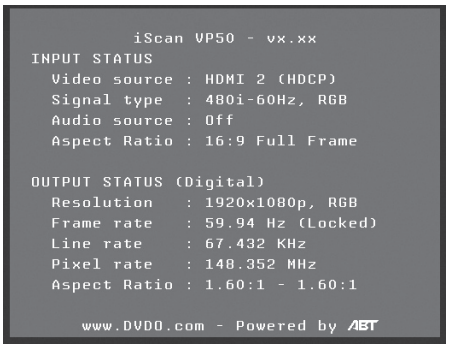
Audio Outputs

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 output carries both audio and video.

Info Screen

Press the Info button to display a window that shows information about the system including:

- Input Status
  - — Video Source
  - — Signal Type
  - — Audio Source
  - — Aspect Ratio (Frame AR/Active AR)
- Output Status
  - — Resolution
  - — Frame Rate
  - — Line Rate
  - — Aspect Ratio (Display AR/Screen AR)



This screen can be helpful during troubleshooting.

Power Supply Input

The iScan VP50 comes with a 6V@7A AC-to-DC converter power supply, which accepts 100-240 VAC at 50/60Hz.

To attach power to the unit:

1. Attach the removable power cord to the external power supply.
2. Plug the removable 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 'DC In' port on the back of the iScan VP50. The iScan VP50 should power on and display 'DVDO iScan VP50 / Powered by ABT' on the FPD for a couple of seconds.

IMPORTANT: Use only the power supply that came with your iScan VP50, or a replacement procured directly from ABT.

Initial Set-Up

Once you have installed the iScan VP50 into your system, you must properly configure it for the display device being driven. The iScan VP50 is shipped from the factory with the following preset default settings:

- Input Select is set to AUTO, to automatically detect an active input in a pre-configured priority.
- The Digital Video output is selected with RGB 4:4:4 color space
- The output format is set to ATSC (DTV) 480p

Use either the remote control or the front panel controls to perform the initial setup of the iScan's output. The procedure below uses the front panel buttons to perform initial setup. Accessing the iScan VP50's OSD is crucial, not only in allowing you to navigate the menu of the iScan VP50, but also to let you know that the iScan is sending a compatible signal to the display. If the OSD is not visible on the display's screen when you press one of the sub-menu buttons on the remote control, then you must configure the iScan with the Output Setup menu to output a signal that the display can accept.

Use these steps to allow you to see the OSD.

STEP 1 - Power Up

1. Attach the removable power cord to the external power supply.
2. Plug the removable 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 VP50. The iScan VP50 should power on and display 'DVDO iScan VP50 / Powered by ABT' on the FPD.

STEP 2 - Connect the iScan VP50 to your system

Displays with a DVI or HDMI Input

The default output on the iScan VP50 is digital RGB 4:4:4 (DVI Standard). If you have changed this setting, follow these instructions to change the settings back.

1. Press the **Menu** button on the front panel of the iScan VP50 once. You should see 'Main Menu / Input Select' on the FPD.
2. Press the ▲ button twice. You should see 'Main Menu / Configuration' on the FPD.
3. Press the ▶ button. You should see 'Configuration / Test Pattern' on the FPD.
4. Press the ▼ button until you see 'Configuration / Factory Default' on the FPD.
5. Press the ▶ button and you should see 'Factory Default / No'. Press the ▼ button once so that 'Factory Default / Yes' is displayed on the FPD. Press the **Enter** button and the unit will reset to factory default settings and you should see the iScan VP50's On Screen Display (OSD) on your screen.

Displays with a VGA HD-15 or 5BNC RGBHV input

1. Press **Menu** on the front panel of the iScan VP50 once. You should see 'Main Menu / Input Select' on the FPD.
2. Press ▲ once. You should see 'Main Menu / Output Setup' on the FPD.
3. Press **Enter**. You should see 'Output Setup / Analog/Digital' on the FPD.
4. Press **Enter**. You should see 'Analog/Digital / BNC (Analog)'. If this setting is already set to 'BNC (Analog)', press the ? one time. If this setting is set to 'HDMI (Digital)', press ▲ once and then press **Enter**. You should see 'Output Setup / Analog/Digital' on the FPD.
5. Press ▼ four times. You should see 'Output Setup / Color Space' on the FPD.

6. Press **Enter** once. You should see 'Color Space / RGB' on the FPD. If you see 'YPbPr', press the ▲ once and press **Enter**. You should see the iScan VP50's On Screen Display (OSD) on your screen.

NOTE: The iScan VP50 cannot output an RGBHV signal if the input signal is from a DVI or HDMI source with HDCP. Instead the iScan VP50 outputs a blue screen.

Displays with a Component (YPbPr) Input

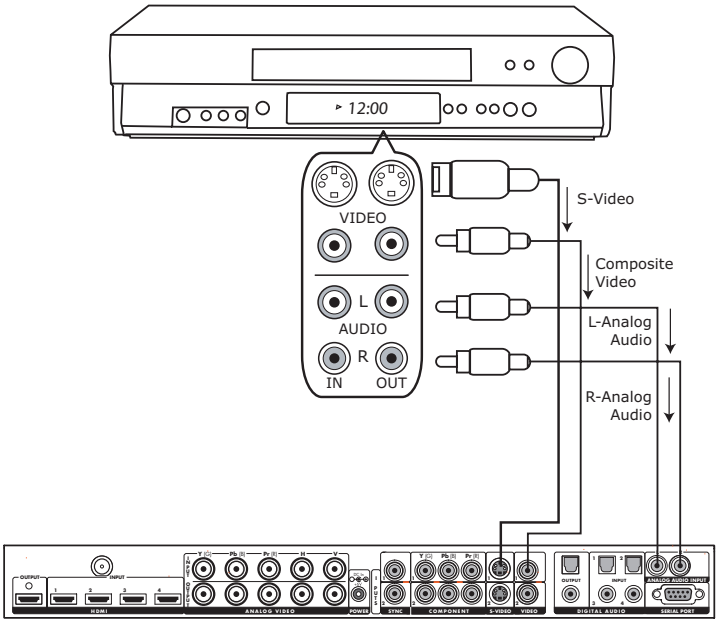
1. Press the **Menu** button on the front panel of the iScan VP50 once. You should see 'Main Menu / Input Select' on the FPD.
2. Press ▲ once. You should see 'Main Menu / Output Setup' on the FPD.
3. Press **Enter**. You should see 'Output Setup / Analog/Digital' on the FPD.
4. Press **Enter**. You should see 'Analog/Digital / BNC (Analog)'. If this setting is already set to 'BNC (Analog)', press the ? one time. If this setting is set to 'HDMI (Digital)', press ▲ once and then press **Enter**. You should see 'Output Setup / Analog/Digital' on the FPD.
5. Press ▼ four times. You should see 'Output Setup / Color Space' on the FPD.
6. Press **Enter** once. You should see 'Color Space / YPbPr' on the FPD. If you see 'RGB', press the ▲ once and press **Enter**. You should see the iScan VP50's On Screen Display (OSD) on your screen.

NOTE: The iScan VP50 cannot output a component signal if the input signal is from a DVI or HDMI source with HDCP. Instead the iScan VP50 outputs a blue screen

STEP 3 - Connecting Your Sources to the iScan VP50

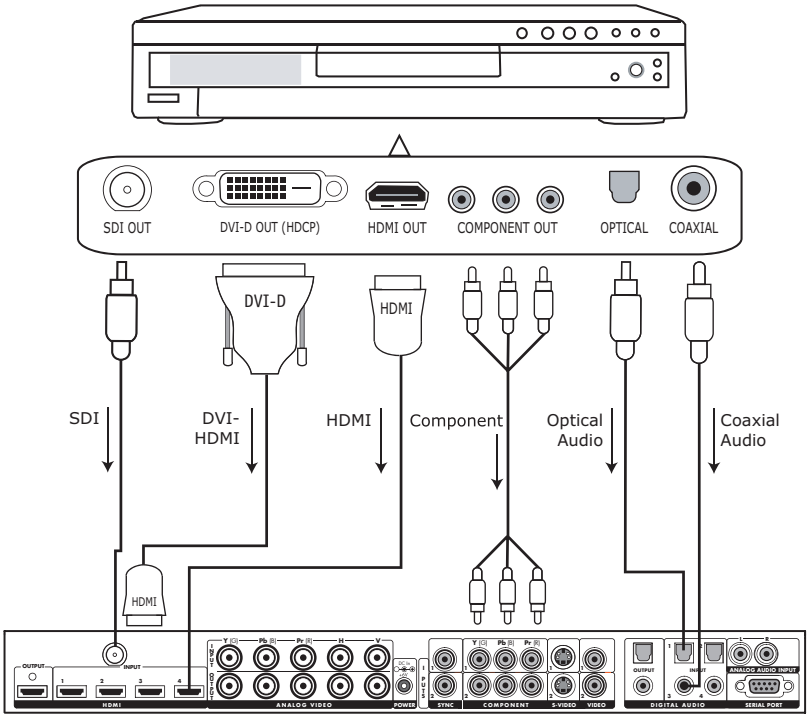
Up to 13 video sources can be connected to the iScan VP50. Use the following suggestions for connections to several popular video sources.

VCR/LD Player/DVR



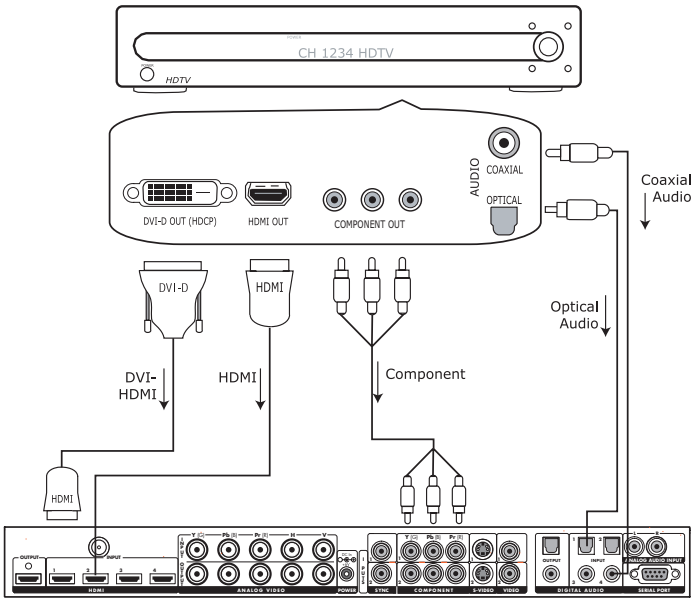
NOTE: Some VCRs and LD players have S-Video outputs. These give an improved picture from these sources. If your LD player or DVR has a digital audio output, ABT recommends you use that connection

DVD Player/DVD Recorder



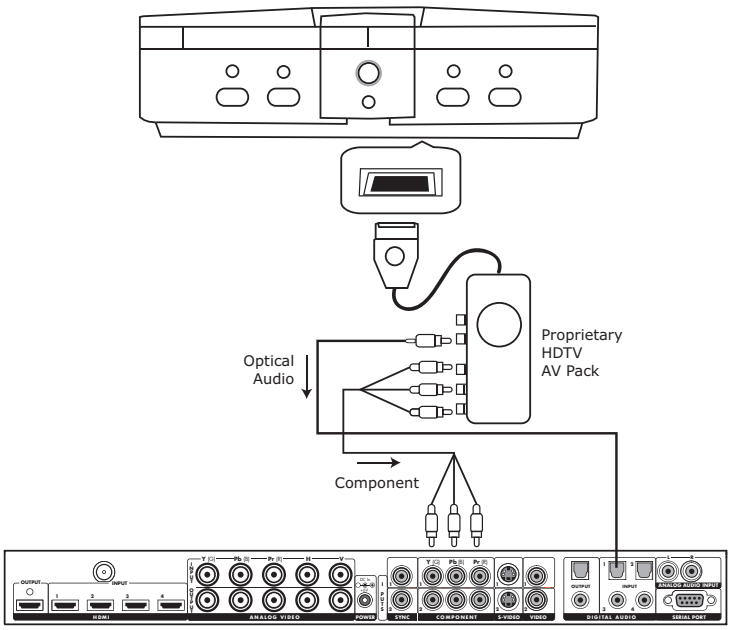
NOTE: If you have a display with an HDMI/DVI input, ABT recommends you use the DVI/HDMI output of your DVD player with the player's output resolution set to the lowest output resolution (preferably 480i. With a component connection, set the player's output to 480i, minimizing the amount of processing done in the player.

HD-STB/DVR, HD-DVD, Blu-ray Disc or DVHS



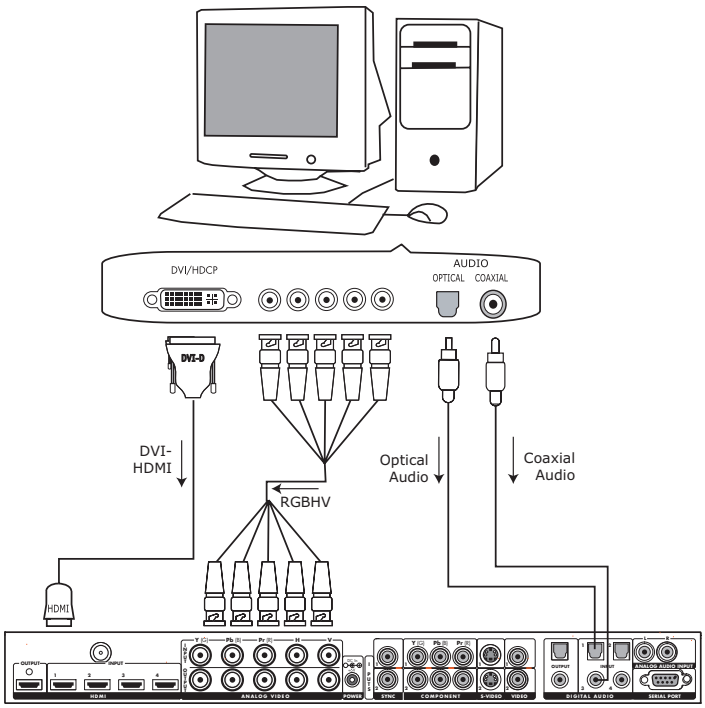
NOTE: Some set top boxes require you to switch the output resolution. This means that if you are watching an HD channel you must manually switch the output resolution to 720p/1080i, or if you are watching an SD channel, you must manually switch the output resolution to 480i or 480p, 480i preferably.

Game Console



NOTE: Set the game console to output all resolutions (480i, 480p, 720p, 1080i)

PC



NOTE: Only 480p/576p/720p/1080i/VGA (640x480)/SVGA (800x600)/XGA (1024x768)/SXGA (1280x1024) resolutions are supported at 60Hz.

Audio Operation

The iScan VP50 features an audio delay function to exactly match the video delay incurred by the video processing. The iScan VP50 accepts four discrete digital audio inputs, two optical (Audio 1, 2) and two coaxial (Audio 3 and 4) inputs, one analog audio input and four HDMI audio inputs. The locations of the audio inputs are shown on the back panel diagrams earlier in this owner's manual.

The factory default audio assignment is as follows:

Audio 1 (optical): None
Audio 2 (optical): None
Audio 3 (coaxial): None
Audio 4 (coaxial): None
Stereo (analog): None

NOTE: The HDMI audio inputs can only be assigned to the same HDMI video input although any of the other audio inputs can be assigned to any of the HDMI video inputs.

You can assign an audio input to each Video input in the following manner:

1. Select a video input on the remote control.
2. Select 'Audio 1, 2, 3, 4, Stereo, HDMI' or Off from the 'Input Adjust ⇨ Audio Input' menu.

NOTE: If an analog video input is selected, the HDMI option will not be available.

Input Select

There are eleven video inputs on the iScan VP50:

- VIDEO 1 - Video 1 (Composite)
- VIDEO 2 - Video 2 (Composite)
- S -VIDEO 1 - S -Video 1
- S -VIDEO 2 - S -Video 2
- COMPONENT 1 - Component/RGBs 1
- COMPONENT 2 - Component/RGBs 2
- HDMI 1 - HDMI 1
- HDMI 2 - HDMI 2
- HDMI 3 - HDMI 3
- HDMI 4 – HDMI 4
- SDI – SDI
- AUTO - Automatic active input detection and selection

These inputs can be accessed in five different ways:

- Using the front panel using the ▲ and ▼ buttons
- Using the remote control with the direct access buttons
- Using a universal remote programmed with the discrete codes
- Using the OSD from the front panel or from the remote to access the Input Select menu
- Using RS232 Serial Automation Protocol described in the appendix.

Input Aspect Ratio Control

The Input Aspect Ratio control selects the aspect ratio for the current input signal. The iScan VP50 automatically converts from the selected input aspect ratio to the selected output aspect ratio.

The iScan VP50 allows the user to define two parameters for each input signal, the 'Frame' and the 'Active AR'

For the Zoom, Pan and Borders functions, push the ▲ or ▼ button to select the two control settings available: horizontal and vertical. Push the **Enter** button to adjust each setting.

- Push ▲ and ▼ to increase or decrease the setting.
- Push **Exit** again to exit this mode.

> **NOTE:** The Zoom and Pan functions are applied to the input signal, not the output. This is an important consideration, especially for the Pan function. For example: If you do not zoom a full frame image more than 100%, there is nothing to pan. However, if part of the image is not on the screen, then the Pan function will work.

The VP50's menu is exit automatically after 30 seconds of no user interaction.

Video input signals are usually classified in the following two ways:

- Frame Aspect Ratio
- Active Input Aspect Ratio

Frame Aspect Ratio

Frame Aspect Ratio (FAR) consists of two possible ratios: 4:3 or 16:9. DVD discs encoded in a 16:9 frame are sometimes referred to as anamorphic or enhanced for widescreen TV's. For example, a non-anamorphic widescreen DVD has a FAR of 4:3.

Active Aspect Ratio

Active Aspect Ratio (AAR) is the aspect ratio of the image or content (movie). This content is typically stated on the back cover of DVD discs. Some common active aspect ratios are as follows:

1.33:1 (4:3)
1.55:1
1.66:1
1.78:1 (16:9)
1.85:1
2.35:1

To use aspect ratio's in addition to these, the iScan VP50 provides the option to choose a custom aspect ratio called User with a range of 1.01:1-3.00:1. These options can be accessed by using the **Aspect** button on the remote control.

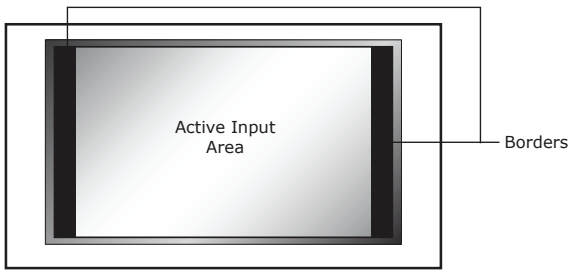
iScan Image Mapping

The situation when the Frame Aspect Ratio (FAR) is the same as the Active Aspect Ratio (AAR) is sometimes called Full Frame. This situation is illustrated below.

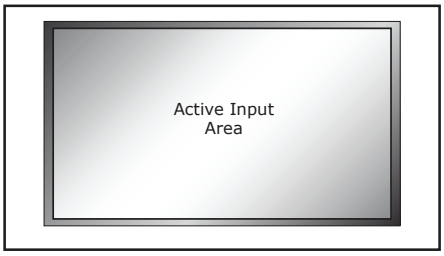
The iScan VP50 maps the AAR to the Output Aspect Ratio (OAR) in the following three ways:

- When the AAR is greater than OAR, the iScan VP50 puts up Borders at the top and bottom as shown below:

- When the AAR is less than the OAR, the iScan VP50 puts up Borders on the left and right as shown below:



- When the AAR is equal to the OAR (Output Aspect Ratio), the iScan VP50 supplies no border as shown below:



NOTE: The Zoom and Pan functions are applied to the input signal, not the output. This is an important consideration, especially for the Pan function. For example: If you do not zoom a full frame image more than 100%, there is nothing to pan. However, if part of the image is not on the screen, then the Pan function will work.

Zoom

The Zoom function zooms in on or magnifies the image on your display. The minimum zoom is 0.5x (no zooming/magnification); the maximum zoom is 2x. Zoom controls can be accessed by using the OSD or by using the direct access button on the remote control. On the remote control, push the Zoom button followed by the ▲/▼ buttons to vertically zoom the image or the Left/Right buttons to horizontally zoom the image. The amount of horizontal and vertical adjustment will be displayed on the front panel display.

Using the OSD, select the control that you would like to adjust, Horizontal or Vertical zoom, and push the Enter button to show the current Zoom setting. Push the ▲ and ▼ button to increase or decrease the zooming factor. Zoom can increase or decrease the size of the image.

Pan

The Pan function allows the image to be shifted up, down, left and right. Note that the Pan function can only be used after the image has been zoomed to any value greater than 100%. Pan controls can be accessed by using the OSD or by using the direct access button on the remote control. On the remote control, push the **Pan** button followed by the ▲/▼ buttons to vertically pan the image or the ◀/▶ buttons to horizontally pan the image. The amount of horizontal and vertical adjustment will be displayed on the front panel display. Using the OSD, select the control that you would like to adjust, Horizontal or Vertical pan, and push the **Enter** button to show the current Pan setting. Push the ▲ and ▼ button to increase or decrease the panning factor.

Borders

The Borders function allows you to add horizontal and/or vertical borders around the image. These borders obscure part of the input image. Certain input-to-output aspect ratios already result in left/right or top/bottom border being added. This control allows the system-generated borders to be extended, or for borders to be added when none exist. As the borders are adjusted (see below) the iScan temporarily increases the gray level of the borders so that they are visible during the adjustment process. The level will return to normal after the adjustment has ceased.

Horizontal Border Control: Push the ▲ button to move the left and right borders towards the middle of the image, increasing the border width and cutting off the sides of the input image. Push the ▼ button to move the left and right borders away from the image and decreases their width. If there are system-generated left/right borders already present (for example, when the input aspect ratio is 4:3 and the output aspect ratio is 16:9), the border width cannot be decreased beyond the base width created by the aspect ratio conversion.

Vertical Border Control: Push the ▲ button to move the top and bottom borders towards the middle of the image, increasing the border height and cutting off the sides of the input image. Push the ▼ button to move the top and bottom borders away from the image and

decrease their height. If there are system-generated top/bottom borders already present (for example, when the input aspect ratio is 16:9 and the output aspect ratio is 4:3), the border height cannot be decreased beyond the base height created by the aspect ratio conversion. Borders are automatically added by the system when the Active Input Aspect Ratio is not the same as the Output Aspect Ratio as explained earlier in this guide. However you can add more borders using the Borders menu.

Presets

You can specify the Input Aspect Ratio by using the Presets or Manually.

Using Presets

You can use Presets with either the OSD or the Remote Control **Input Aspect Ratio** button. Refer to the Preset sub-menu in the Input AR menu for doing this with the OSD. The remote control operation is described below.

- **4:3** Selects 4:3 Full Frame without OSD.
- **16:9** Selects 16:9 Full Frame without OSD.

Pushing the **Input Aspect Ratio** button repeatedly toggles between 4:3 Full Frame, Letterbox, 16:9 Full Frame, 4:3 Stretch, and Preset 1 through Preset 10 and User. You can also navigate through these presets using the ▲ and ▼ buttons, along with **Enter** to confirm the selection.

The ten user-defined preset value selections (Preset 1 - 10) are stored in non-volatile memory and are always available.

Each of these presets consists of the following:

- Frame Aspect Ratio
- Active Input Aspect Ratio
- Zoom parameter
- Pan parameter
- Borders

The User preset selection is also stored in non-volatile memory. However the User selection is always updated after you modify any pre-defined aspect ratio setting. In order to permanently keep a custom aspect ratio setting, you must save it to one of the four preset selections.

Setting the Input Aspect Ratio Manually

You can set the following parameters manually:

- Frame Aspect Ratio
- Active Input Aspect Ratio
- Zoom factor
- Pan parameter
- Borders (horizontal and vertical)

Save User-defined presets as follows:

- Customize the aspect ratio manually (refer to Setting the Input Aspect Ratio Manually above).
- Select one of the presets from the ‘Save User To’ menu. Confirm the action by selecting ‘Yes’.
- There are 10 user-definable presets available.

NOTE: Be careful, because saving to a preset deletes the previous preset. If you have not customized the aspect ratio, and the current aspect ratio settings are the same as a system defined preset. In this case, the system will not allow you to save the preset setting.

Input Adjust Control

Push the Input Adjust button once to show the current input adjustment function. You can cycle through the available functions by pushing this button repeatedly. The available 'input adjust' functions are as follows:

- Deinterlacing
- Overscan
- Line Offset
- Color Space
- Input Level
- VCR mode
- HDMI Config
- Auto Priority
- Audio Input
- AV LipSync

Deinterlacing

There are several deinterlacing modes available on the iScan VP50, 'Auto', 'Film Bias', 'Video', 2:2 Even, 2:2 Odd, Game 1 and Game 2. The functions of these modes are described below

- **Auto** – This mode is the default. 'Auto' represents the best balance between automatic detection of film and video sources, bad edit detection, and identification of mixed-mode sources. This mode should be used when the content may be a mix of film and video content or you are not sure.
- **Film Bias Mode** – This mode is intended for use on content that is known to be film-based.
- **Video Mode** – This mode is intended for use on content that is known to be video-based.
- **2:2 Even** – This mode should be used when the user knows that the source is high-quality 2:2 pulldown (i.e. film-based content played back in a country with a 50Hz video standard) and wants to avoid any loss of cadence lock while watching that source. This mode weaves two adjacent fields together starting with an even field and combining it with the following odd field. This will provide a higher quality overall signal than the 'Auto' or 'Film Mode' settings, providing that the source really is 2:2 pulldown and does not have bad edits. Only one of the '2:2' Deinterlacing settings is correct for any given source and the correct mode can be chosen by simply trying both of them and selecting the one which does not result in combing artifacts.
- **2:2 Odd** – This mode is very similar to '2:2 Even' except that this weaves two adjacent fields together starting with an odd field and combining it with the following even field.
- **Game 1** – This mode is intended for use with game consoles (like those from Sony, Microsoft and Nintendo). This mode gives you minimal latency with edge-adaptive processing. The total amount of delay with source-locked output mode set on the VP50 is about half a frame of delay. Unlocked frame rates will increase this delay.
- **Game 2** – This mode is intended for use with game consoles (like those from Sony, Microsoft and Nintendo). This mode gives you minimal latency with both motion and edge-adaptive processing. The total amount of delay with source-locked output mode set on the VP50 is about one and a half frames of delay. Unlocked frame rates will increase this delay.

Overscan

The Overscan function scales the input image proportionally in both vertical and horizontal dimensions by the user-specified overscan factor. The purpose of Overscan is to remove unwanted image portions around the perimeter of the image. The default overscan value is 0%, which means 100% of the input image is shown. The maximum overscan value is 20% which means the input image is scaled up by 120%.

To adjust the overscan level:

1. Push the ▲ or ▼ button. The current level is shown.
2. Push the ▲ or ▼ button to decrease or increase the amount of overscan. The Overscan value is applied to all input aspect ratios and is independent of the Zoom value.

Line Offset

The line offset adjustment allows the user to vertically adjust the image, when the input signal is 480i/576i on the SDI or HDMI inputs. This function can be set independently for both 480i and 576i input formats.

Color Space

The color space setting allows the user to specify what the input signal is on the HDMI inputs. The options are:

- RGB
- YCbCr 4:2:2
- YCbCr 4:4:4
- Auto

Input Level

The input level setting allows the user to specify the levels of the input signal, either Video (16-235) or PC (0-255). This control only works with an input signal that has RGB color space.

- Video
- PC

VCR Mode

VCR Mode decouples the output timing completely from the input timing to ensure a stable output from the iScan VP50 for VCR playback especially during trick-play modes (play forward, play reverse, still/pause).

- **On** – Output timing is decoupled from the input timing regardless of Frame Rate settings.
- **Off** – Output timing is dependent on Frame Rate settings.
- **Auto** - Turns on VCR Mode if a VCR source is detected.

HDMI Config.

HDCP Mode

There are two HDCP modes:

- **Off:** HDCP is disabled at the iScan VP50's HDMI input. Some sources turn off HDCP in this case and the iScan VP50 drives a non-HDCP DVI display or an analog display.
- **On:** The iScan VP50 continuously looks for a HDCP source on its HDMI input.

NOTE: The iScan VP50 is not designed to remove HDCP from a protected signal. If this setting is set to 'On' make sure that the corresponding HDCP Mode setting on the output is also set to 'On'

Auto AR

In addition to carrying audio and video, HDMI can carry other information, like aspect ratio (AR). If you would like the iScan VP50 to automatically set the AR based on the information on the HDMI signal, than set this setting to 'On.' This AR information can be wrong or implemented incorrectly, so this setting is defaulted to 'Off'.

Auto Color Space

In addition to carrying audio and video, HDMI can carry other information, like color space. If you would like the iScan VP50 to automatically set the AR based on the information on the HDMI signal, than set this setting to 'On', which is the default. If this setting is set to on, the 'Colorspace' adjustment will be unavailable.

Auto Input Priority Selection

The Auto Input Priority Selection function assigns different priorities to the video input's automatic active video selection mode (AUTO in Input Select menu). First select the video input then change the priority of that input.

1 - Press the ▼ button. The first video input VIDEO 1 is shown.

2 - Press the **Enter** button to view the current priority of the selected input.

3 - Press the ▲ or ▼ button to change the priority of the selected input.

4 - Press the **Exit** button again to complete the priority assignment.

5 - Repeat Steps 1 through 4 to select the next video input and adjust the priority setting.

Audio Input

The Audio Input function assigns an audio input to the currently selected video input. Four digital audio inputs and a single analog audio input are available. The HDMI inputs can accept both audio and video. To assign the audio input to another video input, push the ▲/▼ buttons. The front panel display (FPD) shows the current setting. For more info about how to assign an audio input to a video input, refer to ***Audio Input Operation***.

AV Lip Sync™

The iScan VP50 automatically delays the input audio to match the video processing delay. You can choose to increase or decrease the audio delay by changing this setting. Push the ▲ or ▼ button to display the current additional bias delay setting (default 0). Up to 200 milliseconds of delay can always be added to the audio signal after the iScan has compensated for the video delay. Use the ▲ or ▼ button to increase or decrease the delay in milliseconds.

NOTE: The total audio delay cannot be less than 0, that is, the iScan cannot have negative audio delay. If you choose to decrease the automatic delay setting by a certain amount, this value could be changed by the iScan in situations where the iScan's calculated delay plus the specified additional delay results in a value less than 0.

Picture Controls

For each input there are different picture memories for each accepted input resolution. These memories are accessed automatically when an input resolution is detected.

Brightness

This control adjusts the brightness (black level) of the overall image output from the iScan VP50. If you turn it up too high, it may make black look gray. In general, you should adjust this up until you see the black areas of your display turn gray and then back it down just below that point. Default setting is 0 (midrange).

Contrast

Contrast adjusts the ratio between white and black signal levels and is effective as a gain control. The difference between this and the Brightness control is that this adjusts the difference between the brightest and darkest part of the image. Note that all displays have a maximum white level. Going beyond this level only "clips" the upper gray levels and you will lose color resolution at the brighter levels. Adjust this control up until you see the brighter levels of the image begin to wash out, at this point, back it down just below that point. The default setting is 0 (midrange).

Saturation

The iScan VP50 allows you to control the saturation of the image independent of the display. Saturation is the same as the "Color" control on most TVs and controls the richness of the color in the image. The default setting is 0 (midrange).

Hue

As with Saturation, hue can also be controlled independent of the display. Hue is the same as the "Tint" control found on most TVs and controls how colors are displayed in the image. The Hue control is not available for Component or PAL/SECAM inputs. The default setting is 0 (midrange).

Sharpness

The Sharpness setting adjusts the sharpness of the selected input signal. The default setting is 0.

Y/C Delay

Sometimes there is a lag between the Luminance (Y) and the Chrominance (Pb/Pr or Cb/Cr) of the video signal. This causes a color "smearing" because the color component of the image is not lining up properly to the black and white luminance component of the image. The iScan VP50 can compensate for these errors in the source signal by shifting the phase of the Y with respect to the C, forward or backward to align them properly. Use the ▼ and ▲ buttons to adjust the phase and observe the effects on your display to obtain the optimal setting. The default setting is 0. The included ***VRS Optimization and Evaluation DVD*** includes a test pattern to assist with this adjustment in the 'Picture Controls' under the 'Static Patterns'.

Chroma Filter (Auto CUE-C™)

This feature removes chroma upsampling errors (CUE) found in video sources which have been MPEG encoded and then improperly decoded.

- **Off** - No chroma filtering. Use this setting if the source does not have a CUE problem.
- **On** - Chroma filtering is always on. Use this setting if the source is known to have a CUE problem.
- **Auto** - Automatic chroma error detection and correction. Use this setting when you don't know if a source has a CUE problem. Also use this setting for all digital sources which use MPEG2 decoders (DVD players, digital satellite receivers, and so on) as it will also detect and correct chroma errors created by all sources of this type when the source is encoded as interlaced (also sometimes called Interlaced Chroma Problem, or ICP).

Configuration

Test Patterns

The iScan VP50 has 35 internal test patterns to assist in the setup of your individual sources and display. To learn more about how to use the internal test patterns, refer to the section **Setting up an iScan VP50 Using the Internal Test Patterns and the VRS Optimization and Evaluation DVD.** To turn the test patterns on and off, use the **Test Pattern On/Off** button. To navigate backwards and forwards through the available test patterns use the ◀ and ▶ buttons, respectively.

Auto Standby

The default setting is 'Off', which means iScan VP50 is always in Active mode, regardless of the activity state of the selected input. If Auto Standby is 'On', the iScan VP50 goes into Standby mode 30 seconds after the selected input becomes inactive. To see the current setting, press ▲ or ▼. Then press the same button again to change the setting.

LED Brightness

This selection allows the user to configure the behavior of the Front Panel LED brightness. The 'Normal' parameter adjusts the brightness of the Front Panel LED when the menu is being navigated. The 'Navigate' parameter adjusts the brightness of the Front Panel LED during normal usage, when the menu is not being navigated.

User Mode

You have limited access to the output timing controls in 'Normal' mode, which is the default. In 'Advanced' user mode, you have access to the complete set of output timing controls. Push the ▼ button to see the current setting and the FPD displays either 'Normal' or 'Advanced' user level. Push the ▼ button again to select the alternate mode.

Serial Port Rate

The serial port is used by the automation system controllers to control the iScan VP50. The serial port baud rate defaults to 19200 bps, but can be changed using the ▲ or ▼ button.

The supported baud rates are:

- 4800 bps (4.8K)
- 9600 bps (9.6K)
- 14400 bps (14.4K)
- 19200 bps (19.2K)
- 38400 bps (38.4K)
- 57600 bps (57.6K)

Factory Default

The Factory Default option allows you to reset system settings to the factory default.

1- Press either the ▲ or ▼ button. The FPD displays 'No'.

2- Press the same button to switch to 'Yes'.

3- Confirm this selection by pressing the **Enter** button.

The default factory settings are as follows:

- Input Selection: Auto
- Input Aspect Ratio: 4:3 for 480i/p and 576i/p inputs, 16:9 for 720p and 1080i inputs
- Picture Controls: midrange (0)
- Chroma Filter (CUE-C): Auto
- Output Aspect Ratio: (16:9)
- Output Resolution: 480P
- Output Color Space: RGB 4:4:4
- Auto Standby: Off
- Frame Rate
  - 60Hz input - 1:1 source-locked output
  - 50Hz input - unlocked at 59.94 Hz
- User Mode: Normal
- Video Input Priority Settings:
  - 1 – Component 1

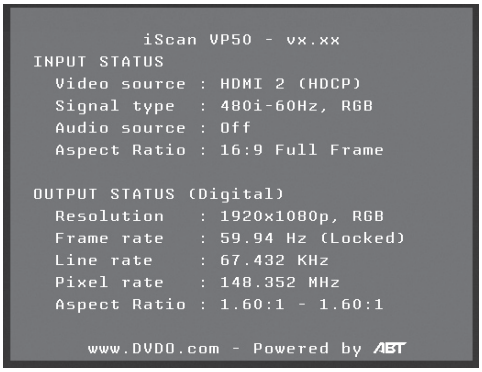
    - 2 – Component 2
    - 3 – S-Video 1
    - 4 – S-Video 2
    - 5 – Video 1
    - 6 – Video 2
    - 7 – HDMI 1
    - 8 – HDMI 2
    - 9 – HDMI 3
    - 10 – HDMI 4
    - 11 – RGBHV/Component
    - 12 – SDI
- Digital Audio Input Assignment
    - Component 1 – Off
    - Component 2 – Off
    - S -Video 1 – Off
    - S -Video 2 – Off
    - Video 1 – Off
    - Video 2 – Off
    - HDMI 1 – Off
    - HDMI 2 – Off
    - HDMI 3 – Off
    - HDMI 4 – Off
    - SDI - Off

Software Update

Use this parameter to install the latest software into your iScan VP50. The latest software is available at **www.dvdo.com/update**. The website includes complete download install instructions.

Information

This setting shows information about the system including:



Input Status

- Video Source
- Signal Type
- Audio Source
- Aspect Ratio (Frame/Active)

Output Status

- Resolution
- Frame Rate
- Line Rate
- Aspect Ratio (Display/Screen)

This screen is helpful during troubleshooting.

Output Setup

Analog/Digital (A/D)

Push the ▼ to show the current output type. Push ▼ again to select the next item on the list shown below. You can also use the ▲ button to cycle through the output types.

- Analog Output (BNC-style connectors)
- Digital Output (HDMI connector)

Output Format

Push the ▼ to show the current output format. Push the ▲ button again to show the next item on the list shown in Table 5. You cannot select the format until you press the **Exit** button. Press the **Enter** button again to select the output timing controls, explained in the Output Timing section.

Table 1. Preset Formats and Characteristics for Analog Video Output

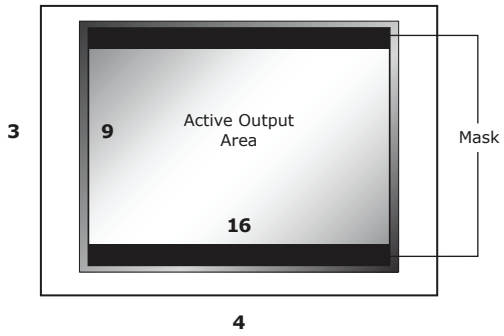
Horizontal Resolution	Vertical Resolution	Scan Type	Sync Signal Line	Sync Signal Type	Color Space
720	480 (480p)	P	Y	Bi-level	YPbPr
1920	540 (540p)	P	Y	Tri-level	YPbPr
720	576 (576p)	P	Y	Bi-level	YPbPr
1280	720 (720p–50)	P	Y	Tri-level	YPbPr
1280	720 (720p–60)	P	Y	Tri-level	YPbPr
1920	1080 (1080i–50)	I	Y	Tri-level	YPbPr
1920	1080 (1080i–60)	I	Y	Tri-level	YPbPr
1920	1080 (1080p–50)	P	Y	Tri-level	YPbPr
1920	1080 (1080p–60)	P	Y	Tri-level	YPbPr
640	480 (VGA)	P	Y	Tri-level	YPbPr
800	600 (SVGA)	P	H-V-	-	RGB
1024	768 (XGA)	P	H+V+	-	RGB
1280	1024 (SXGA)	P	H-V-	-	RGB
848	480	P	H-V-	-	RGB
848	600	P	H-V-	-	RGB
852	480	P	H-V-	-	RGB
852	576	P	H-V-	-	RGB
1360	768	P	H-V-	-	RGB
1360	768	P	H-V-	-	RGB
1365	768	P	H-V-	-	RGB
1366	768	P	H-V-	-	RGB
1366	768	P	H-V-	-	RGB
1024	1024	P	H-V-	-	RGB
1024	576	P	H-V-	-	RGB
1365	1024	P	H-V-	-	RGB
1400	1050	P	H-V-	-	RGB
1400	788	P	H-V-	-	RGB
960	540	P	H-V-	-	RGB
1280	960	P	H-V-	-	RGB
1440	960	P	H-V-	-	RGB
1440	1152	P	H-V-	-	RGB

Output Aspect Ratio Control

There are four controls for Output Aspect Ratio (OAR):

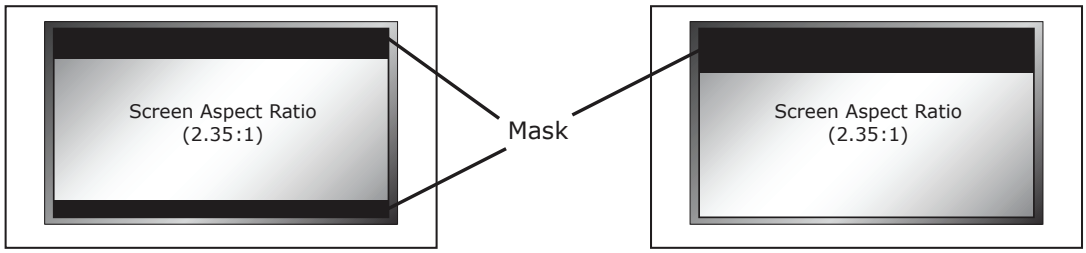
- Display Aspect Ratio
- Screen Aspect Ratio
- Image Shift
- Underscan

The Display Aspect Ratio is the full aspect ratio of the display, normally specified in the display manual. Common display aspect ratios are 4:3 and 16:9. Less common ones are 5:4, 2.35:1 and others. The example below shows a 4:3 projector with a 16:9 screen.

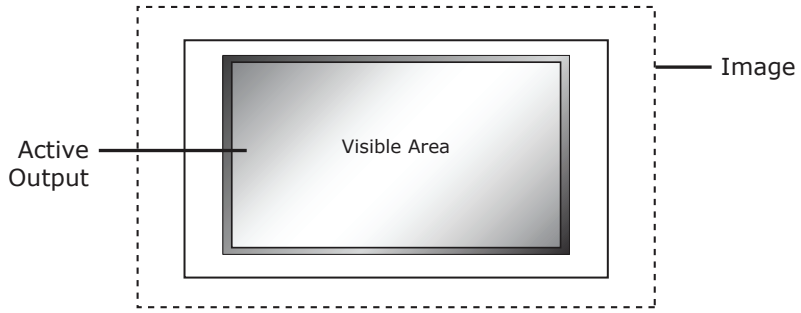


The region outside the Active Output area (called the mask) is inactive, and only important for creating video timing signals for the display. Input video data is never mapped to this region.

When the Display Aspect Ratio is not the same as Active Output Aspect Ratio, the mask is set to blanking levels and always centers the position of the active area over the display area. Image shift allows you to adjust the location of the image on your screen both horizontally and vertically when the 'Screen' aspect ratio is not equal to the 'Display' aspect ratio. The example below shows 16:9 projector (1.78:1) and a 2.35:1 screen, you can shift the image to match the exact location of your screen. In this situation, the image is shifted down putting all of the mask at the top of the projected image.



Underscan represents the visible display area, a sub-set of the Active Output Area. Underscan is like a negative zoom which preserves the aspect ratio of the active area. The default for this setting is 0. As you increase underscan, the smaller portion of the active display area appears while preserving the aspect ratio of the active display area.



Sync Type

The Sync Type option sets the synchronization signal type of the output format. Press the **Up** or **Down** button to show the current sync type. Press the same button again to move to the next sync type.

Currently, the iScan supports seven sync types:

- **Bi-level** bi-level sync on green/luma
- **Tri-level** tri-level sync on green/luma
- **CSync** Composite Sync (on the H sync BNC connector)
- **H+V+** Positive Hsync and Positive Vsync
- **H+V-** Positive Hsync and Negative Vsync
- **H-V+** Negative Hsync and Positive Vsync
- **H-V-** Negative Hsync and Negative Vsync

Color Space

The color space parameter sets the color space of the output format. After highlighting 'Color Space' in the OSD, press **Enter** or **?** to show the current color space. Press the same button again to select the alternate color space. Two analog color space options are supported: YPbPr (default) and RGB. Two digital color space options are supported: RGB (default) and YCbCr (both 4:2:2 and 4:4:4).

Output Level

The output level setting allows the user to specify the levels of the output signal, either Video (16-235) or PC (0-255). Some displays are expecting to receive the increased dynamic range of a PC signal, and will show an image that looks "washed-out" if this improperly set to 'Video'.

Framerate Conversion

This parameter enables framerate conversion. There are two sets of controls, one for 50Hz input sources and one for 60Hz input sources.

For 50Hz sources, if the original source material is progressive at 25Hz (uses 2:2 pulldown), the output framerate can be source locked at 25Hz, 50Hz or 75Hz. The 25Hz setting outputs each original 25Hz frame, the 50Hz setting repeats each original 25Hz frame 2 times, and the 75Hz setting repeats each of the original 25Hz frames 3 times. You can also set the output frame rate to a specific value (unlocked mode).

For 60Hz sources, if the original source material is progressive at 24Hz (uses 3:2 pulldown), the output frame can be source locked to 24Hz, 48Hz, 60Hz or 72Hz. The 24Hz setting outputs each original 24Hz frame, the 48Hz setting repeats each original 24Hz frame 2 times, while the 72Hz setting repeats each frame 3 times. As with 50Hz sources, you can also set the output frame rate to a specific value (unlocked mode).

Press ▲ or ▼ once to see the current input rate. Press the same button again to switch input rate.

50 ⇨ 50Hz input sources

60 ⇨ 60Hz input sources

Press **Enter** to select the input frame rate and change the output frame rate settings. Select the desired output frame rate setting by using ▲ or ▼ .

For 50 Hz input sources, the available settings are:

- **25Hz Lock** source locked 25Hz
- **50Hz Lock** source locked 50Hz
- **75Hz Lock** source locked 75Hz
- **Unlock** unlocked

For 60 Hz input sources, the available settings are:

- **24Hz Lock** source locked 24Hz

- **48Hz Lock** source locked 48Hz
- **60Hz Lock** source locked 60Hz
- **72Hz Lock** source locked 72Hz
- **Unlock** unlocked

If you chose 'Unlock', press **Enter** again to specify the desired output frame rate. Use the ▲ or ▼ button to increase or decrease the frame rate. Press **Output Select** again to exit the menu and complete the output frame rate conversion setting.

Locked mode (1:1): This means that the iScan's output frame rate tracks the input rate - i.e., the output rate is locked to the input rate. In the 1:1 mode - i.e., 60 Hz source-locked to 60 Hz, and 50 Hz source-locked to 50 Hz - there is always exactly one output frame for every input frame/field. This mode has the advantage that there are never any dropped or repeated frames (unless the source itself does this). One disadvantage of this mode is that when the video source is changed, the iScan has to re-lock to the new input signal timing. This causes a disruption in the iScan's output signal while the locking process occurs, and can cause many displays to loose sync to the iScan's signal and temporarily blank.

Unlocked mode: This means that the iScan's output frame rate is independent of the input rate. Regardless of any variations in the input, the output frame rate will be fixed at the specified value. This mode results in the most stable output signal as it's independent of any changes in the input signal. Unlike the locked mode(s), the iScan's output signal timing will not be disrupted when the input source is changed. However, it's guaranteed to cause dropped or repeated frames as the input and output frame rates are not the same. Note that regardless of what number the unlocked output frame rate is set to, it will never be identical to the input rate in this mode as the output signal timing is independent of the input timing. These dropped/repeated frames can result in visible irregularities in smooth motion, sometimes called motion judder or stutter.

Locked mode (2:2 or 3:3): For standard definition interlaced sources the iScan can detect 2:2 and 3:2 pulldown cadences and convert these to either a 2:2 or 3:3 frame repetition rate. The main advantage of this is for 60 Hz sources using 3:2 pulldown, as the irregular 3:2 pattern can be converted to 2:2 at 48 Hz or 3:3 at 72 Hz. In these modes, each original film frame is repeated exactly 2 or 3 times, respectively, and motion is therefore smoother. Note that these modes are only useful when the video source is film-based - i.e., 3:2 pulldown for 24 Hz film on 60 Hz sources, and 2:2 pulldown for 25 Hz film on 50 Hz sources. If the source is not film-based, then the end result is a lot like unlocked mode without that mode's stability advantages.

The iScan VP50 has a built-in motion-judder test pattern to help you determine which frame rates your display supports. This is the test pattern with the vertical bar which pans horizontally back and forth across the screen. Note that this test pattern is used to determine the capabilities of your display, and does not provide any indication of motion smoothness (or lack thereof) in the iScan's output. The test pattern is used with the unlocked output mode of the iScan. You set the (unlocked) output frame rate to be the one you're testing your display for, and observe if the back and forth panning motion of the test pattern is smooth or if it jerks or stutters. If the former, then the display supports that particular resolution and frame rate without performing any frame rate conversion of its own; if the latter, then the display is performing frame rate conversion on the signal.

Examples. These configuration options provide a lot of flexibility to deal with differing source and display characteristics. Let's look at a few examples:

A. The display only supports 60 Hz input. In this case, the iScan must produce a (nominal) 60 Hz output. For 60 Hz sources you can run in either 1:1 source-locked mode, or in unlocked mode with the output frame rate set to approximately 60 Hz. You might choose unlocked mode if the display takes a long time to re-sync to new inputs and you channel-surf a lot. Locked mode will provide the smoothest motion and guarantee no dropped or repeated frames. For 50 Hz sources, you'd set the iScan's output to unlocked with a (nominal) 60 Hz frame rate. This will result in some motion irregularities as the iScan periodically repeats frames to convert the 50 Hz input to the 60 Hz output rate, but since the display only supports 60 Hz inputs there's not much you can do.

B. The display only supports 50 Hz input. This is the opposite of case A, and the required configuration is also the opposite - i.e., the output frame rate for 60 Hz source should be set to 50 Hz unlocked, and the rate for 50 Hz sources can be set to either 1:1 locked or unlocked at 50 Hz (for all the same reasons noted in the first example).

C. The display supports a wide range of frame rates (e.g., a CRT projector). In this case you can configure things most any way you like. If motion judder with 3:2 pulldown bothers you, then use the iScan's 48 Hz or 72 Hz source-locked output options for film-based 480i sources. If not, then 60 Hz locked is a good choice. For 50 Hz sources, unless you notice display flicker at 50 Hz, you'd probably want to run at 50 Hz locked to avoid repeated/dropped frames.

D. A digital display supports a narrow range of frame rates, either around 50 Hz or 72/75 Hz. If the display supports both 50 Hz and 48 Hz, and the primary use of 60 Hz source is film-based material, then you would likely want to configure the iScan as 48 Hz source-locked for 60 Hz sources, and 50 Hz locked (or unlocked, if desired) for 50 Hz sources. If the higher frame rate (72/75) is desired or required, then both source types can be configured for the 3:3 source-locked output option. For non-film material you may find that there's too much motion stutter, although that tends to be a very personal thing as not everyone perceives this the same way (as with low frame rate display flicker).

Border Level

The border level setting is global, that is, there is only one border level setting for the system. To adjust the border level, push the ▲ or ▼ button. The current level is shown. The default value is '0'. Push the ▲ or ▼ button to decrease or increase the border level.

Gamma Correction

The default gamma curve on the iScan VP50's output is Linear (1.0). This should be left set to Linear unless you choose the correct output gamma curve for the connected display. The range is 0.5 to 2.5.

HDCP Mode

There are two HDCP modes:

- **Off:** HDCP is disabled at the iScan VP50's HDMI output.
- **On:** The iScan VP50 continuously looks for a HDCP display device on its HDMI output.

NOTE: The iScan VP50 is not designed to remove HDCP from a protected signal. If this setting is set to 'On' make sure that the corresponding HDCP Mode setting on the input is also set to 'On'.

Display Profiles

A display profile is a group of display parameters you can save and easily recall in the future. A display profile consists of a set of display parameter selected from the Output Setup menu.

This includes the following:

- Output Type (Analog or Digital)
- Format (Resolution and all video output timing information)
- Output Aspect Ratio
- Sync Type
- Color Space (YPbPr/YCbCr or RGB)
- Output Level (Video or PC)

- Frame Rate Conversion information
- Border Level
- Gamma Correction
- HDCP Mode

You can save up to ten display profiles (Profile 1 through 10). These profiles can be recalled by pressing the **Display Profiles** button on the remote control and using the navigational buttons to select the desired profile.

A current custom display profile (called User) is also stored in non-volatile memory. However it will be overridden when you make any modifications to the display profile. You should always save the current display profile to Profile 1 - Profile 10 to prevent the custom profile from being lost.

The **Display Profile** feature is only enabled when you set the 'User Mode' to 'Advanced', just like the full control of output timing parameters in the Format menu. Factory default values for the ten display profiles and User are as follows:

- Output Type: Digital
- Format: 480p
- Output Aspect Ratio: 16:9
- Active Output AR: 16:9
- Sync Type: H-/V-
- Color Space: RGB 4:4:4
- Output Level: Video
- Frame Rate: 50Hz input, unlocked to 59.94, 60Hz input – locked.
- Border Level: 0
- HDCP Mode: On

Selecting and Saving a Display Profile

Use the following procedure to select and save a display profile:

1. Set up the profile by making changes to the output setup menu items. If you make custom settings (such as output timing parameters), they are saved to 'User'.
2. Save the settings to a profile by selecting Profile 1 through 10 in the 'Save' menu and pressing **Enter**.
3. Once the Profile is saved, the 'Save' menu is grayed out until you make changes to the profile again.

Auto Linking of Input and Display Profiles

The 'Auto' feature links a specific input to a display profile. To enable this feature, use Output Setup ⇨ Display Profile ⇨ Auto. When you select an input/format, the display profile used (Profile 1 through 10 or User) is saved in the saved input settings. When you turn Auto 'On', the system uses a display profile based on the selected input.

For example, suppose you choose Display Profile 1 using Video 1 input and Display Profile 2 using S-Video 1 input.

- With **Auto** set to On, when Video 1 is the active input, the system automatically uses Display Profile 1.
- When S-Video 1 is the active input, Display Profile 2 is used. When **Auto** is Off, the selected display profile is used independently of the active input.

Non-Volatile Memory Settings

The iScan VP50 stores a variety of user settings in non-volatile memory. Non-volatile memory retains its contents when power is lost. There is one group of system settings and one group of user settings.

System Settings

Table 2. shows System settings.

Table 2. System Settings

Setting	Description
Display Profile	One of four display profiles or User
Auto Display Profile	If enabled, selects a display profile based on input selection
Active Input	One of many VP50 inputs or Auto Active Input
Auto StandBy	Off or On
Video Priority	Priority list of inputs when Auto Active Input is on
User Mode	Normal or Advanced
Border Level	Blank to quarter gray
HDMI Input	Input mode is Automatic or Pass through
Power LED	On, Off or Auto.
Test Pattern Generator	Current selected test pattern
SDI Line Offset	One for 50Hz input and one for 60Hz input
Serial Port Bit Rate	Select an available baud rates.
HDCP Mode	Auto or On

Input/Format Settings

The iScan VP50 supports an independent set of saved settings based on input and format as shown in Table 3.

Table 3. Input/Format Settings

Settings	Input	Format
1	Composite 1	NTSC
2	Composite 2	PAL/SECAM
3	S-Video 1	NTSC
4	S-Video 2	PAL/SECAM
5	Component / RGBS 1	480i (NTSC)
6	Component / RGBS 1	576i (PAL/SECAM)
7	Component / RGBS 1	480p (NTSC)
8	Component / RGBS 1	576p (PAL/SECAM)
9	Component / RGBS 1	720p (ATSC)
10	Component / RGBS 1	1080i (ATSC)
11	Component / RGBS 2	480i (NTSC)
12	Component / RGBS 2	576i (PAL/SECAM)
13	Component / RGBS 2	480p (NTSC)
14	Component / RGBS 2	576p (PAL/SECAM)
15	Component / RGBS 2	720p (ATSC)
16	Component / RGBS 2	1080i (ATSC)
17	RGBHV/Component	480p (NTSC)
18	RGBHV/Component	576p (PAL/SECAM)
19	RGBHV/Component	720p (ATSC)
20	RGBHV/Component	1080i (ATSC)
21	RGBHV/Component	VGA
22	RGBHV/Component	SVGA
23	RGBHV/Component	XGA
24	RGBHV/Component	SXGA
25	SDI	480i (NTSC)

26	SDI	576i (PAL/SECAM
27	HDMI 1	480i (NTSC)
28	HDMI 1	576i (PAL/SECAM)
29	HDMI 1	480p (NTSC)
30	HDMI 1	576p (PAL/SECAM)
31	HDMI 1	720p (ATSC)
32	HDMI 1	1080i (ATSC)
33	HDMI 1	VGA
34	HDMI 1	SVGA
35	HDMI 1	XGA
36	HDMI 1	SXGA
37	HDMI 2	480i (NTSC)
38	HDMI 2	576i (PAL/SECAM)
39	HDMI 2	480p (NTSC)
40	HDMI 2	576p (PAL/SECAM)
41	HDMI 2	720p (ATSC)
42	HDMI 2	1080i (ATSC)
43	HDMI 2	VGA
44	HDMI 2	SVGA
45	HDMI 2	XGA
46	HDMI 2	SXGA
47	HDMI 3	480i (NTSC)
48	HDMI 3	576i (PAL/SECAM)
49	HDMI 3	480p (NTSC)
50	HDMI 3	576p (PAL/SECAM)
51	HDMI 3	720p (ATSC)
52	HDMI 3	1080i (ATSC)
53	HDMI 3	VGA
54	HDMI 3	SVGA
55	HDMI 3	XGA
56	HDMI 3	SXGA
57	HDMI 4	480i (NTSC)
58	HDMI 4	576i (PAL/SECAM)
59	HDMI 4	480p (NTSC)
60	HDMI 4	576p (PAL/SECAM)
61	HDMI 4	720p (ATSC)
62	HDMI 4	1080i (ATSC)
63	HDMI 4	VGA
64	HDMI 4	SVGA
65	HDMI 4	XGA
66	HDMI 4	SXGA

Settings Input Format

There is a separate set of settings not just for each input but for each format as well. This provides a lot of flexibility but is complex. For example, you can make settings for an input with an NTSC source, but when the source is changed to PAL, you must specify new settings.

Each input/format settings contains the information shown in Table 4.

Table 4. Format Settings

Setting	Description
Picture Control	
	Brightness
	Contrast
	Saturation
	Hue
	Sharpness
	Chroma Error Correction
	Y/C Delay

Display Profile		Profile 1 - 4 or User
Audio Select		Audio 1 - 4
Audio Delay		
Overscan		
VCR Mode		
Film Mode		
Input AR Preset		Preset 1 - 4 or User Preset Note 1
User Preset	Frame AR	
	Active Input AR	Pre-defined or User AR
	User AR	
	Hor. Zoom	Hor. Zoom
	Vert. Zoom	Vert. Zoom
	Hor. Pan	Hor. Pan
	Vert. Pan	Vert. Pan
	Hor. Borders	Hor. Borders
	Vert. Borders	Vert. Borders

There is only one set of Input AR presets (Preset 1 through Preset 10) for the whole system. However the 'User' Preset is per input and per format.

Setting up an iScan VP50 Using the Internal Test Patterns and the *VRS Optimization and Evaluation DVD*

The iScan VP50 has 35 built-in test patterns to assist in the setup of your display and your individual sources. ABT recommends that you use the included ***VRS Optimization and Evaluation DVD*** to assist in this setup.

Determining the Correct Output Resolution for Your Display:

The first step to properly set up your iScan is to determine the optimum output resolution to set your iScan VP50 to get the best picture from your display. To do this correctly, you must know what the native resolution or maximum resolution of your display is. Native resolution refers to the actual pixel count of a fixed pixel display. Fixed pixel display technologies include plasma, LCD, DLP and LCoS. CRT-based technologies use scan lines so they do not have a native resolution but they do have a maximum resolution.

Keep in mind that some displays do not accept their native resolution.

The following is an example of specifications from an LCD TV:

Diagonal Screen Size (inches) 32

Display Capability 480p/720p/1080i

Aspect Ratio 16:9 (Widescreen)

Resolution (Number of Pixels) 1280 x 768 (1,049,088 pixels)

The native resolution of this display is 1280x768, which an iScan VP50 can output, but this display is only capable of accepting 480p, 720p, or 1080i signals. For this display, the best output resolution to choose on the iScan VP50 is 720p, since it is the closest to the native resolution of this display.

An example of the specifications from a CRT-based rear projection display is shown below:

Diagonal Screen Size (inches): 53

Aspect Ratio: 16:9 (Widescreen)

CRT Type: 7" Diagonal

HDTV Compatibility: 540p/1080i

This display only displays two resolutions, both of which the iScan VP50 can output. To find out which one looks best on your display use familiar material, like a favorite DVD, to compare to find out which resolution is more to your liking on your display.

Below are several different popular display technologies and their most likely native resolutions.

Plasma
42-43" – 852x480, 1024x768, 1024x1024 (ALiS)
50-63" – 1280x768, 1360x768, 1365x768, 1366x768, 1920x1080 (1080p)

DLP
Rear Projection – 1280x720 (720p), 1920x1080 (1080p)
Front Projection – 852x480, 848x600, 1024x768, 1280x720 (720p), 1920x1080 (1080p)

LCD
Rear Projection – 1280x720 (720p), 1366x768
Front Projection – 1024x768, 1280x720 (720p), 1366x768
Direct View – 1024x768, 1280x720 (720p), 1366x768, 1920x1080 (1080p)

LCoS
Rear Projection – 1280x720 (720p), 1366x768, 1920x1080 (1080p)
Front Projection – 1024x768, 1280x720 (720p), 1366x768, 1920x1080 (1080p)

CRT
Rear Projection – 480p, 540p, 1080i
Front Projection – 1280x720 (720p), 1280x960, 1440x960, 1440x1152, 1920x1080 (1080p)

Initial Setup of the iScan to Your Display:

Test Patterns used:	Frame Geometry
	Checker board
	Vertical Lines
	Horizontal Lines
	Judder

The following information uses a Panasonic 50" commercial plasma as an example.

1 - Select the preset which is closest to the output resolution that you need. In this situation, the closest preset is 1366x768. There are two 1366x768 presets on the VP50 and in the case of this display, the '1366x768 (2)' is the proper choice. It is very easy to try both to see which one is closer to giving you the desired results.

Output Setup ⇨ Format ⇨ 1366x768 (2)

2 - Display the 'Frame/Geometry' test pattern to verify that the image is positioned correctly on your display.

Configuration ⇨ Test Patterns ⇨ Frame Geometry

NOTE: To turn the test patterns on and off, use the **Test Pattern On/Off** button on your remote control. You can also navigate backwards and forwards through the test patterns, using the ◀ and ▶ buttons (on either side of **Test Pattern On/Off**) respectively.

When this test pattern is displayed correctly, it should look like this, with a one-pixel wide white border around the edge of the screen:

Frame/Geometry Test Pattern

In some cases the test pattern will not be positioned or sized correctly and the user will need to make the proper adjustments. To change the horizontal size of the image, for example, you must first put the iScan in 'Advanced' user mode.

Configuration ⇨ User Mode ⇨ **Advanced**

Output Setup ⇨ Format ⇨ 1366x768 (2) ⇨ H-Size ⇨ **1360**

In some cases, the output format is correct, but the image just needs to be shifted to fill the screen correctly. Do this by using the Horizontal and Vertical Shift options in the 'Output Setup' menu.

Output Setup ⇨ Format ⇨ 1366x768 (2) ⇨ H-Shift ⇨ Range

Output Setup ⇨ Format ⇨ 1366x768 (2) ⇨ V-Shift ⇨ Range

NOTE: Any adjustments made to the output format change your selected output from the resolution you selected to 'User'. This allows you to adjust the output without affecting the default settings. There are three test patterns used to verify that the chosen output resolution is the native resolution of your display and that you are bypassing any internal processing in your display. They are the checkerboard, vertical lines and horizontal lines test patterns. When the checkerboard test pattern is displayed correctly, close up you should be able to see a 1-pixel checkerboard and at proper viewing distance the image should appear as an even gray. If your display is CRT-based you will not see this checkerboard, but your screen should be an even gray. When this test pattern is displayed incorrectly, 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 your display or your display may scale all input signals even if the input resolution is already at native resolution. One reason they may happen is that the display may be on the wrong Aspect setting. For example some manufacturers have a "native mode" or "dot-by-dot" mode which turns off al internal processing. Check to make sure that the output resolution selected on the iScan is the correct output resolution for your display.

NOTE: If this test pattern does not appear as it should, and you have chosen the native resolution of your display, you may not be able to bypass the internal processing on your display.

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, you know that the display is scaling the signal horizontally. To override the internal scaling, adjust the horizontal size of the image to see if the test pattern can be displayed correctly.

Output Setup ⇨ Format ⇨ User ⇨ H-Size ⇨ Adjust

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 then you know that the display is scaling the signal vertically. To override the internal scaling, adjust the vertical size of the image to see if the test pattern can be displayed correctly.

Output Setup ⇨ Format ⇨ User ⇨ V-Size ⇨ Adjust

The 'Judder' test pattern displays a bar that bounces back and forth at the chosen output frequency selected in the 'framerate' parameter. When this test pattern is displayed correctly, the bar moves smoothly across the screen and bounces from side to side. When this pattern is displayed incorrectly, this bar may 'tear' as it moves across the screen. To adjust the framerate conversion, go to the 'Output Setup' menu.

For displays that will only display 50Hz (PAL)

Output Setup ⇨ Framerate ⇨ 50Hz ⇨ 50Hz Lock

Output Setup ⇨ Framerate ⇨ 60Hz ⇨ Unlock ⇨ 50.0

For displays that will only display 60Hz (NTSC)

Output Setup ⇨ Framerate ⇨ 50Hz ⇨ Unlock ⇨ 59.94

Output Setup ⇨ Framerate ⇨ 60Hz ⇨ 60Hz Lock

Display Calibration

Test Patterns Used:
- Brightness/Contrast
- Color8 Bars75
- Color8 Bars100
- Gray Ramp
- Red
- Green
- Blue
- Cyan
- Magenta
- Yellow
- Black
- White

The iScan VP50 has several test patterns to assist in the setup of your display. Adjustments should be made on your display, not on the iScan, to correctly setup your iScan and display. The 'Brightness/Contrast' test pattern will assist you in setting up both the brightness (black level) and contrast (white level) of your display. The 'Brightness/Contrast' test pattern is composed of 4 quarter-screen blocks. Two of the blocks have a background level of standard black and the other two blocks have a background level of standard white. Embedded in the black blocks are 3 bars. One is 4 IRE below black (blacker-than-black), one is 1 IRE above black, and the third is 2 IRE above black. Embedded in the white blocks are 3 bars. One is 1 IRE above white (whiter-then-white), one is 1 IRE below white, and the third is 2 IRE below white. The bottom two blocks differ slightly from these levels. For the bottom two blocks, the blacker-than-black is at the lowest possible luma level and the whiter-than-white bar is at the highest possible luma level. When the brightness and contrast are adjusted correctly, you should be able to see the 1 IRE and 2 IRE above black bars on the black background and the 1 IRE and 2 IRE below white bars should be visible on the white background. When the brightness is adjusted

correctly, black objects should appear 'black' with the details still intact and lighter areas should be 'light', not gray, with the details still intact. When the contrast is adjusted correctly, white objects will appear 'white' with the details still intact. Because the contrast settings can affect brightness settings we recommend that you check the brightness setting after making this adjustment.

NOTE: If you have a CRT based display, following the instructions above may yield a contrast setting too high. If the contrast is set too high, you will get blooming and loss of details in the highlighted areas. It is more helpful to use the two vertical lines in the test pattern. Adjust the contrast up and down and you will notice that these lines will bend as you increase the contrast. To properly adjust contrast on a CRT based display, decrease the contrast until the vertical lines start to straighten out. If possible, the two lines should be straight. On some CRT, the lines may not straighten even if you turn the contrast to its minimum. If this is the case, slowly increase the contrast to a point just before the vertical lines have extreme bending. You have now properly set up the contrast of your display. Continue to set up brightness as detailed above.

The 'Color8 Bars75' and 'Color8 Bars100' will assist in setting up the saturation (color) and hue (tint) of your display. The 'Color8 Bars75' test pattern consists of 8 vertical bars across the screen at a 75% saturation level. The 'Color8 Bars100' test pattern consists of 8 vertical bars across the screen at a 100% saturation level. From left to right the bars are: white, yellow, cyan, green, magenta, red, blue, and black. To properly adjust the saturation and hue you will need to use the blue colored filter that comes with DVD's like AVIA. You will also need to turn off any automatic flesh tone controls on your display before making these adjustments. When the Saturation and Hue are adjusted correctly, the white bar and the blue bar should be exactly the same shade when looking through the blue filter. Saturation and hue settings interact with each other so after making this setting you may want to go back and check that the saturation setting is correct.

The 'Gray Ramp' can help verify that your display is showing the gradients between black and white correctly. You should see a smooth transition between black and white with this test pattern.

Source Calibration

Test Patterns Used:
- Half Black/White
- H-Clr7 Bars75
- H-Clr7 Bars100
- H-Clr8 Bars75
- H-Clt8 Bars100

To get the best performance out of each of your sources you should individually calibrate each input specifically to the connected source. In this section, all picture control adjustments are made using the iScan's picture controls. Keep in mind that if you replace a source with a new component you will also want to recalibrate the input. To calibrate each source correctly you will need the source to output a reference test pattern similar to what is built in to the iScan. For sources like DVD, LD and D-VHS, this content is readily available. But for a source like HD satellite or cable, these test patterns are played on channels like HDNet at off hours. So if you have a DVR, ABT recommends that you record these test patterns. The ***VRS Optimization and Evaluation DVD*** will assist in setting up the input to which your DVD player is connected. ABT recommends that you use a digital connection, DVI or HDMI, or a high quality analog connection, like component video. Don't use S-Video or Composite video for a higher quality source like DVD. Before calibrating the input for your DVD player, make sure that your DVD player is set to '16:9' output, not '4:3'. You will also want to turn off any extraneous features like noise reduction which may add more noise than help. Set all picture settings on the DVD player to either 'Off', 'default', or '0'.

Use the test patterns included on the ***VRS Optimization and Evaluation DVD*** to adjust the picture controls on this input. If you are not familiar with how to make these adjustments, ABT highly recommends that you watch the guided setup on a DVD like ***AVIA*** or ***Digital Video Essentials*** first, and then make each adjustment. Each picture control is explained in depth and the narrative will tell you what to look for in a properly adjusted display. Once you have made these adjustments, there are several patterns on the ***VRS DVD*** that can be used in conjunction with the built-in test patterns of the iScan to verify the settings are correct.

Access these test patterns as follows:

1. Insert the ***VRS DVD*** into your DVD player
2. From the main menu, select 'Picture Controls'.
3. Next select 'Half Patterns'.
4. Select the matching test pattern on the iScan VP50 and the ***VRS DVD*** and adjust accordingly.

Record Your Settings

Once you have set up your iScan VP50, ABT recommends that you record your settings on the installation worksheet which can be reprinted from the DVDO website at **http://www.dvdo.com/faq/faq_pro_man.php.**

Test Pattern Descriptions

Frame & Geometry

This test pattern contains two specific test features. The first is a 1-pixel wide box around the very outside of the image. This is used to determine when the entire iScan output image is visible on the display. The arrows along the middle of each edge provide an indication of the amount of overscan (if any). The blue boxes in the center of each quadrant are used for measuring display geometry. The rectangle in the center of the gray boxes should appear square on a 4:3 aspect ratio display, the next large rectangle should appear square on a 16:9 display, the next on a 1.85:1 display, and the largest rectangle should be square on a 2.35:1 display. The blue boxes are also used as an indication that the horizontal positioning of the output image is correct. Due to the iScan VP50's 4:2:2 internal processing, with a custom output resolution it is possible to cause the Cb & Cr components to become reversed. If the blue boxes are displayed as red instead of blue, then the Cb & Cr components are reversed. This can be corrected by ensuring that there is an even number of pixels in the sum of the horizontal sync and horizontal back porch.

Brightness & Contrast

This test pattern is composed of 4 quarter-screen blocks. Two of the blocks have a background level of standard black, and the other two blocks have a background level of standard white. Embedded in the black blocks are 3 bars. One is 4 IRE below black, one is 1 IRE above black, and the third is 2 IRE above black. Embedded in the white blocks are 3 bars. One is 1 IRE above white, one is 1 IRE below white, and the third is 2 IRE below white. This test pattern is useful for setting display black and white levels. The bottom 2 blocks differ slightly from these levels. For the bottom 2 blocks, the blacker-then-black bar is at the lowest possible luma level, and the whiter-than-white bar is at the highest possible luma level. Also included in the pattern are 2 needle pulses, which can be used to check CRT voltage regulation as well as the presence of scan velocity modulation.

1-Pixel Checkerboard

This test pattern consists of a 1-pixel black and white checkerboard. The test pattern alternates black and white pixels in both the vertical and the horizontal direction. This pattern is useful for exactly matching the iScan's output resolution to that of the display to achieve 1:1 pixel mapping and bypass any scaling operation which may be incorporated in the display.

1-Pixel Vertical Lines

This test pattern consists of an alternating series of 1-pixel black and white vertical lines. The test pattern alternates black and white pixels in only the horizontal direction. This pattern is useful for exactly matching the iScan's output resolution to that of the display in order to achieve 1:1 pixel mapping and bypass any scaling operation which may be incorporated in the display. Its use is similar to that of the 1-pixel checkerboard, but it operates only in the horizontal direction.

1-Pixel Horizontal Lines

This test pattern consists of an alternating series of 1-pixel black and white horizontal lines. The test pattern alternates black and white pixels in only the vertical direction. This pattern is useful for exactly matching the iScan's output resolution to that of the display to achieve 1:1 pixel mapping and bypass any scaling operation which may be incorporated in the display. Its use is similar to that of the 1-pixel checkerboard, but it operates only in the vertical direction. This pattern is blacked-out for the 1080i output resolution due to the severe flicker it causes on some displays.

Judder

This test pattern consists of a vertical bar which moves slowly back and forth across the screen. The bar's motion is updated once in each output frame period of the iScan, and it moves a fixed number of pixels horizontally in each frame period. This moving bar test pattern is intended to identify the frame rates at which a display will operate. If the display is not performing any frame rate conversion, i.e., it is actually displaying the output frame rate of the iScan — the motion will be very smooth. However, if the display is performing any type of frame rate conversion there will be very noticeable stutter introduced in the smooth motion. There may also be other objectionable artifacts introduced depending on how the display actually performs the conversion. These include tearing (top and bottom portion of the bar are horizontally misaligned) and distortion.

75% Color Bars

This is a standard full-height color bar pattern. There are 7 vertical bars across the screen at a 75% saturation level. From left to right the bars are white, yellow, cyan, green, magenta, red, blue, and black.

100% Color Bars

This is a standard full-height color bar pattern. There are 7 vertical bars across the screen at a 100% saturation level. From left to right the bars are white, yellow, cyan, green, magenta, red, blue, and black.

Gray Ramp

This test pattern is a horizontal gray ramp. There is a black level (0 IRE) vertical bar along the left of the pattern and a white level (100 IRE) vertical bar along the right side of the pattern. Between the two bars is a monotonic gray ramp which ranges from the minimum luminance level (i.e., blacker than black) at the left to the maximum luminance level (i.e., whiter than white) at the right. The minimum level of the ramp is a 10-bit digital value of 4 (equivalent to an 8-bit value of 1); the maximum level of the ramp is a 10-bit value of 1020 (equivalent to an 8-bit value of 254).

Half-Transparent Black/White

This test pattern has the left half of the image transparent (i.e., the left half of the current video source is displayed on the left half of the image), with the right half of the image composed of a standard black level on the top half and a standard white level on the bottom half. The black level is 0 IRE (10-bit value of 64, or an 8-bit value of 16) and the white level is 100 IRE (10-bit value of 940, or an 8-bit value of 235). This pattern is useful for matching the black/white levels of an input source to the reference black/white levels of the test pattern. If a display is first set up for black and white levels using the iScan VP50's test patterns, then each input source can be quickly and accurately matched to these reference levels by visually comparing the video source image on the left half of the display to the reference test pattern levels on the right half of the display. The test pattern's black and white blocks are designed to match up with standard test patterns available from hardware or software (e.g., DVD) test pattern generators.

Half- Transparent Color Bars

These test patterns have the top half of the image transparent (i.e., the top half of the current video source is displayed on the top half of the image), with the bottom half of the image composed of a standard set of color bars. These patterns are useful for matching the color levels of an input source

to the reference color levels of the test patterns. If a display is first set up for color levels using the iScan VP50's test patterns, then each input source can be quickly and accurately matched to these reference levels by visually comparing the video source image on the top half of the display to the reference test pattern levels on the bottom half of the display. The test pattern color bars are designed to match up with standard test patterns available from hardware or software (e.g., DVD) test pattern generators. To ensure compatibility with a wide variety of color bar patterns, there are four different half-transparent color bar patterns available – 75% color bars with 7 bars (white, yellow, cyan, green, magenta, red, blue), 100% color bars with 7 bars, 75% color bars with 8 bars (white, yellow, cyan, green, magenta, red, blue, black), and 100% color bars with 8 bars.

Troubleshooting

1. Problem: My iScan VP50 shows an error message.

If the iScan VP50 does not boot correctly, you may get an error message. Performing a hard reset of the iScan VP50 should clear any memory. If you still get an error message after performing a hard reset, contact our Technical Support department for service.

How to perform a hard reset of the iScan VP50:

1. Unplug the power from the back of the unit
2. Reinsert the power plug back into the back of the unit, while pressing and holding the 'Menu' and 'Exit' buttons on the front panel of the unit for 2-3 seconds
3. The iScan VP50 will take about 15-20 seconds to perform the hard reset

2. Problem: A blue screen appears when I connect the iScan to the DVI or HDMI input of my display.

The default output from the iScan VP50 is digital RGB 4:4:4 (DVI Standard). If the Status LED on the front panel of the VP50 is blinking blue, make sure that the display that you are connected to is HDCP compliant.

3. Problem: The Blue status LED blinks on the front panel of the iScan VP50.

A blinking blue light on the iScan VP50 means that the iScan is processing an HDCP-protected signal, but is unable to authenticate with the display. Verify that your display is HDCP compliant. If it is not HDCP compliant, use component connections. If the display is compliant, then verify that the 'HDCP mode' is set to 'On' in the 'Input Adjust' and 'Output Setup' menus. If the problem persists, check the cabling and try new cables, if possible or try cycling the power on your display or HDCP source.

4. Problem: Will I lose the settings on my iScan VP50 if I update the software version?

Currently, the iScan VP50 may lose its settings when a software update is performed.

Take note of your output settings before updating the software version on your unit

Complete Menu Tree

Input Select			
	Video 1		
	Video 1		
	S-Video 1		
	S-Video 2		
	Component 1		
	Component 2		
	RGBHV/Component		
	HDMI 1		
	HDMI 2		
	HDMI 3		
	HDMI 4		
	SDI (Only available when SDI-601a module is installed)		
	Auto		
Input Aspect Ratio			
	Frame AR		
		4:3	
		16:9	
	Active AR		
		1.33:1	
		1.55:1	
		1.66:1	
		1.78:1	
		1.85:1	
		2.35:1	
		User	
	Panorama		
		On	
		Off	
	Zoom		
		Horizontal	
			Range: 0-100
		Vertical	
			Range: 0-100
	Pan		
		Horizontal	
			Range: 0-100
		Vertical	
			Range: 0-100
	Borders		
		Horizontal	
			Range: 0-200
		Vertical	
			Range: 0-200
	Presets		
		4:3 Full Frame	
		Letterbox	
		16:9 Full Frame	
		4:3 Stretch	
		Preset 1	
		Preset 2	
		Preset 3	
		Preset 4	
		Preset 5	
		Preset 6	
		Preset 7	
		Preset 8	
		Preset 9	
		Preset 10	
		User	

	Save User to		
		Preset 1	
			No
			Yes
		Preset 2	
			No
			Yes
		Preset 3	
			No
			Yes
		Preset 4	
			No
			Yes
		Preset 5	
			No
			Yes
		Preset 6	
			No
			Yes
		Preset 7	
			No
			Yes
		Preset 8	
			No
			Yes
		Preset 9	
			No
			Yes
		Preset 10	
			No
			Yes
Input Adjust			
	Deinterlacing		
		Auto	
		Film Bias Mode	
		Video Mode	
		2:2 Even	
		2:2 Odd	
		Game Mode 1	
		Game Mode 2	
	Overscan		
		Range: 0-20	
	Line Offset		
		Range: 0-30	
	Color Space		
		RGB	
		YPbPr	
		YCbCr 4:2:2	
		YCbCr 4:4:4	
		Auto	
	Input Level		
		Video	
		PC	
	VCR Mode		
		Off	
		On	
		Auto	
	HDMI Config.		
		HDCP Mode	
			On
			Off
		Auto AR	
			On
			Off
		Auto Color Space	

		Off
		On
	Auto Priority	
		Range: 1-13
	Audio Input	
		Audio 1
		Audio 2
		Audio 3
		Audio 4
		Stereo
		HDMI (Only available the selected video input is HDMI) Off
	AV Lipsync	
		Range: 0-200
Picture Control		
	Brightness	
		Range: -50-50
	Contrast	
		Range: -50-50
	Saturation	
		Range: -50-50
	Hue	
		Range: -50-50
	Sharpness	
		Range: 0-7
	Y/C Delay	
		Range: -50-50
	CUE Correction	
		Off
		On
		Auto
Configuration		
	Test Patterns	
		Frame/Geometry
		Checkerboard
		Vertical Lines
		Horizontal Lines
		Judder
		Brightness/Contrast
		Color8 Bars75
		Color8 Bars100
		Gray Ramp
		Window IRE10
		Window IRE20
		Window IRE30
		Window IRE40
		Window IRE50
		Window IRE60
		Window IRE70
		Window IRE80
		Window IRE90
		Window IRE100
		Xhatch Coarse
		Xhatch Fine
		Focus
		H-Clr7 Bars75
		H-Clr7 Bars100
		H-Clr8 Bars75
		H-Clr8 Bars100
		Black
		White
		Red
		Green
		Blue
		Cyan

		Magenta
		Yelllow
	Auto Standby	
		Off
		On
	LED Brightness	
		Navigation
		Range: 0-3
		Normal
		Range: 0-3
	User Mode	
		Normal
		Advanced
	Serial Port Rate	
		4800
		9600
		14400
		19200
		38400
		57600
	Factory Default	
		No
		Yes
	Software Update	
		No
		Yes
	Information	
Output Setup		
	Analog/Digital	
		BNC (Analog)
		HDMI (Digital)
	Format	
		480p
		540p
		576p
		720p-50
		720p-60
		1080i-50
		1080i-60
		1080p-50
		1080p-60
		640x480 (VGA)
		800x600 (SVGA)
		1024x768 (XGA)
		1280x1024 (SXGA)
		848x480
		848x600
		852x480
		852x576
		1360x768 (1)
		1360x768 (2)
		1365x768
		1366x768 (1)
		1366x768 (2)
		1280x768
		1024x1024
		1024x768
		1024x576
		1365x1024
		1400x1050
		1400x788
		960x540
		1280x960
		1440x960
		1440x1152

			Horizontal Shift	
				Range:
			Horizontal Size	
				Range:
			Horizontal Front Porch	
				Range:
			Horizontal Sync	
				Range:
			Horizontal Back Porch	
				Range:
			Vertical Shift	
				Range:
			Vertical Size	
				Range:
			Vertical Front Porch	
				Range:
			Vertical Sync	
				Range:
			Vertical Back Porch	
				Range:
	Aspect Ratio			
		Display		
			4:3	
			5:4	
			16:9	
			2.35:1	
			User	
				Range: 1.00-3.00
		Screen		
			4:3	
			16:9	
			2.35:1	
			User	
				Range: 1.00-3.00
		Image Shift		
			Vertical	
				Range: -30-30
			Horizontal	
				Range: -30-30
		Underscan		
			Range: 0-100	
	Sync Type			
		Bi-Level		
		Tri-Level		
		Composite		
		H+/V+		
		H+/V-		
		H-/V+		
		H-/V-		
	Color Space			
		RGB		
		YPbPr		
		YCbCr 4:2:2		
		YCbCr 4:4:4		
	Output Level			
		Video		
		PC		
	Framerate			
		50Hz		
			25Hz Lock	
			50Hz Lock	
			75Hz Lock	
			Unlock	
		60Hz		
			24Hz Lock	

		48Hz Lock	
		60Hz Lock	
		72Hz Lock	
		Unlock	
	Border Level		
		Range: 0-100	
	Gamma Correction		
		Off	
		On	
			Red
			Green
			Blue
	HDCP Mode		
		Off	
		On	
	Display Profile		
		Select	
			Profile 1
			Profile 2
			Profile 3
			Profile 4
			Profile 5
			Profile 6
			Profile 7
			Profile 8
			Profile 9
			Profile 10
		Save	
			Profile 1
				No
				Yes
			Profile 2
				No
				Yes
			Profile 3
				No
				Yes
			Profile 4
				No
				Yes
			Profile 5
				No
				Yes
			Profile 6
				No
				Yes
			Profile 7
				No
				Yes
			Profile 8
				No
				Yes
			Profile 9
				No
				Yes
			Profile 10
				No
				Yes
		Auto	
			Off
			On

DVDO by Anchor Bay Technologies, Inc.

300 Orchard City Drive, Mailstop 131

Campbell, CA 95008 USA

Tel: 866-423-DVDO (3836) Fax: 408-379-3845

www.dvdo.com

Customer Support

Tel: 866-423-DVDO (3836) Extension 333

help@dvdo.com