

iScan™ VP20

HIGH-DEFINITION VIDEO PROCESSOR & HUB



Powered by **ABT**

OWNER'S MANUAL



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LIMITED WARRANTY
 WARRANTY VALID ONLY IN THE U.S.A.



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iScan Video Processors	1 Year	1 Year

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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

SECTION 1 – GETTING STARTED.....	2
Introduction	2
Document Conventions	2
Unpacking and Inspection	3
Display Compatibility Requirements	3
Installation Guidelines	4
SECTION 2 – BASIC OPERATION.....	5
Front Panel Overview	5
Rear Panel Overview	5
<i>Video Inputs</i>	6
<i>Video Outputs</i>	6
<i>Audio Inputs</i>	6
<i>Audio Outputs</i>	7
Remote Control Overview	7
Curtain Button	7
Remote Control Battery Installation	8
<i>Menu Navigation</i>	8
Info Screen	8
Power Supply Input	9
SECTION 3 – SETUP.....	10
Initial Set-Up	10
<i>STEP 1 - Power Up</i>	10
<i>STEP 2 - Connect the iScan VP20 to your system</i>	10
<i>STEP 3 - Connecting Your Sources to the iScan VP20</i>	10
<i>VCR/LD Player/DVR</i>	11
<i>DVD Player/DVD Recorder</i>	11
<i>High-Definition Set Top Box or DVR/D-VHS</i>	12
<i>Game Console</i>	13
<i>PC</i>	13
Audio Operation	14

SECTION 4 - MENU OPTIONS.....	15
Input Select	15
Input Aspect Ratio Control	15
<i>Zoom</i>	15
<i>Pan</i>	16
<i>Borders</i>	16
<i>Presets</i>	16
Input Adjust Control	17
<i>Deinterlacing</i>	18
<i>Overscan</i>	18
<i>Line Offset</i>	18
<i>Color Space</i>	19
<i>Input Level</i>	19
<i>VCR Mode</i>	19
<i>HDCP Mode</i>	19
<i>Auto Input Priority Selection</i>	19
<i>Audio Input</i>	20
<i>AV Lip Sync</i>	20
Picture Controls	20
<i>Brightness</i>	20
<i>Contrast</i>	20
<i>Saturation</i>	20
<i>Hue</i>	20
<i>Sharpness</i>	21
<i>Y/C Delay</i>	21
<i>Chroma Filter (Auto CUE-C)</i>	21
Configuration	21
<i>Test Patterns</i>	21
<i>Auto Standby</i>	21
<i>LED Brightness</i>	21
<i>User Mode</i>	21
<i>Serial Port Rate</i>	22
<i>Factory Default</i>	22
<i>Software Update</i>	23
<i>Information</i>	23

Output Setup	23
<i>Output Format</i>	23
<i>Output Aspect Ratio Control</i>	24
<i>Sync Type</i>	24
<i>Color Space</i>	24
<i>Output Level</i>	24
<i>Framerate Conversion</i>	24
<i>Border Level</i>	24
<i>HDCP Mode</i>	24
SECTION 5 – APPENDIX	25
Non-Volatile Memory Settings	25
<i>System Settings</i>	25
<i>Input/Format Settings</i>	25
Setting up an iScan VP20 Using the Internal Test Patterns and Avia: Guide to Home Theater Calibration DVD	26
<i>Determining the Correct Output Resolution for Your Display</i>	27
<i>Initial Setup of the iScan to Your Display</i>	28
<i>Display Calibration</i>	30
<i>Source Calibration</i>	31
<i>Record Your Settings</i>	32
<i>Test Pattern Descriptions</i>	32
Troubleshooting	34

SECTION 1 – GETTING STARTED

Introduction

Thank you for purchasing the iScan VP20 Video Processor powered by ABT. This product delivers a level of quality among the very highest available today.

We are especially pleased to bring you ABT's new Precision Video Scaling II. This technology enables precision upconversion of standard and high definition (480i/p, 576i/p, 720p or 1080i) video sources and content to the native or optimum resolution of your display, delivering best-in-class front-of-screen performance. Available output resolutions span from VGA up to 1080p, including the standard HDTV resolutions of 720p and 1080i.

The iScan VP20 can also be upgraded with the Precision Deinterlacing Card which includes ABT's new Precision Deinterlacing technology. With this upgrade, the iScan VP20 has reference-quality deinterlacing for SD video, film and mixed-mode content. This card is a user/dealer-installable upgrade and it is compatible with both the iScan VP20 and the iScan VP30.

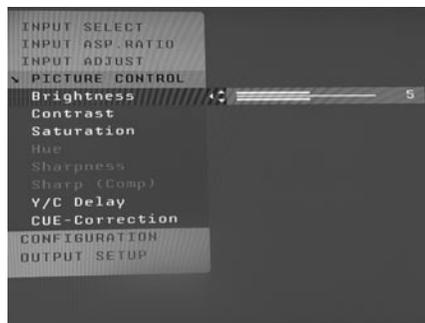
In addition to our own video scaling technology and available deinterlacing technology, the iScan VP20 also offers a host of other innovative features, including:

- 3 HDMI (High Definition Multimedia Interface) inputs and 1 HDMI output
- Flexible Digital and Analog Audio Switching
- Precision Audio/Video Time-Delay Synchronization
- Timebase Correction
- Framerate Conversion (PAL <—> NTSC)
- Input and Output Aspect Ratio Controls
- Flexible Zoom and Pan Controls

This Owner's Manual can help you set up your new iScan VP20, and give you the information required to match it to your display. It can also show you how to connect it to and use it with the other components in your system.

Document Conventions

In this Owner's Manual, the menu structure is referred to in the following abbreviated form:



Navigating the On Screen Display (Image A)

For example, to adjust the 'Brightness' press the 'Picture Control' button and then using the up/down arrow buttons, highlight 'Brightness' and press enter to adjust the setting.

If you were changing this value to 5, the abbreviated instructions would read as follows:

Picture Control ⇨ **Brightness** ⇨ **5**

Unpacking and Inspection

Your iScan VP20 carton should contain the following items:

- iScan VP20 Video Processor
- Universal 6V@5A AC-to-DC Power Converter
- US Power Cord (International Customers, consult your local authorized DVDO reseller)
- Remote Control
- iScan VP20 Product Guide
- iScan VP20 Quick Start Guide
- Serial Cable for Software Updates and Automation (1:1)
- Software CD

The iScan VP20 uses an HDMI digital connector to provide a video output signal. You must purchase a cable 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

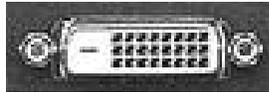
DVDO iScan video processing products are compatible with a wide range of displays. These include digital TVs, projectors, and flat panel displays, as well as other emerging technologies that can support 480p or higher resolution video signals.

To determine if your display is compatible with the DVDO iScan VP20, 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 VP20. If your display only has analog High Definition inputs than we recommend the iScan VP30.

Digital Inputs



HDMI input



DVI-D input

The following types of displays with digital video inputs should be compatible with the iScan VP20 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 VP20 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 . . .

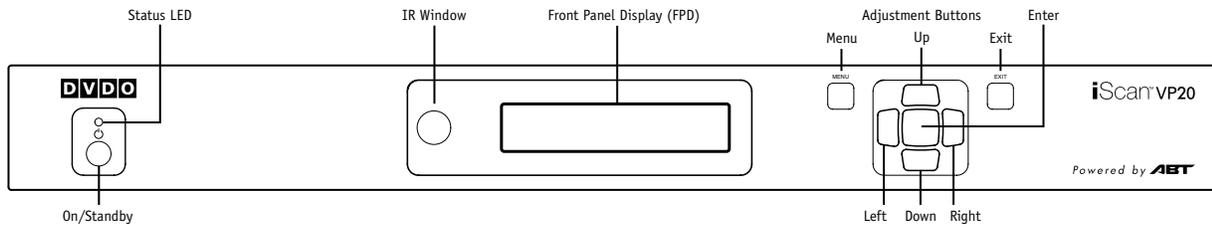
- Install the iScan VP20 on a solid, flat, level surface such as a table or shelf. You can also install the iScan VP20 in a standard 19" equipment rack using an optional rack-mount kit available from authorized DVDO resellers or directly from DVDO.
- Select a dry, well-ventilated location.
- Use only 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 VP20 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 VP20 directly above heat-producing equipment such as power amplifiers or other components that generate heat during use.
- Expose the iScan VP20 to a high temperatures, humidity, steam, smoke, dampness, or excessive dust. Avoid installing the iScan VP20 near radiators and other heat producing appliances.
- Install the iScan VP20 near unshielded TV or FM antennas, cable TV decoders, and other RF-emitting devices that might cause interference.
- Place the iScan VP20 on a thick rug or carpet or cover the iScan VP20 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 VP20.
- 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.

SECTION 2 – BASIC OPERATION

Front Panel Overview



Status LED – This displays the current state of the iScan VP20

- 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.

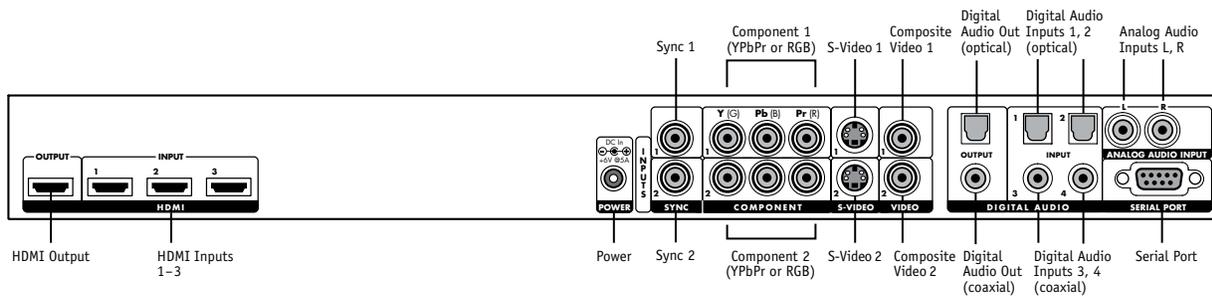
Front Panel Display (FPD) – This is where all information from the on screen display (OSD) is duplicated to assist in the setup of your iScan.

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 VP20 or using the remote using the navigation keys (**v** and **^**). To do this, press the **Down** or **Up** without pressing the **Menu** button first.

Rear Panel Overview



Video Inputs

The iScan VP20 has nine (9) video inputs.

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, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz)
- Component/RGBS 2 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz)
- HDMI 1 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, VGA/SVGA/XGA@60Hz RGB/YCbCr 4:4:4/ YCbCr 4:2:2)
- HDMI 2 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, VGA/SVGA/XGA@60Hz RGB/YCbCr 4:4:4/ YCbCr 4:2:2)
- HDMI 3 (480i/p, 576i/p, 720p@50Hz, 720p@60Hz, 1080i@50Hz, 1080i@60Hz, VGA/SVGA/XGA@60Hz RGB/YCbCr 4:4:4/ YCbCr 4:2:2)

Video Outputs

The iScan VP20 has an HDMI digital video output which 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 VP20 to a display that has a DVI input, use either an HDMI-to-DVI cable or an adapter.

Audio Inputs

There are eight (8) audio inputs on the iScan VP20:

- Two (2) Optical Digital inputs
- Two (2) Coaxial Digital inputs
- One (1) Analog (L/R) input
- Three (3) 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.

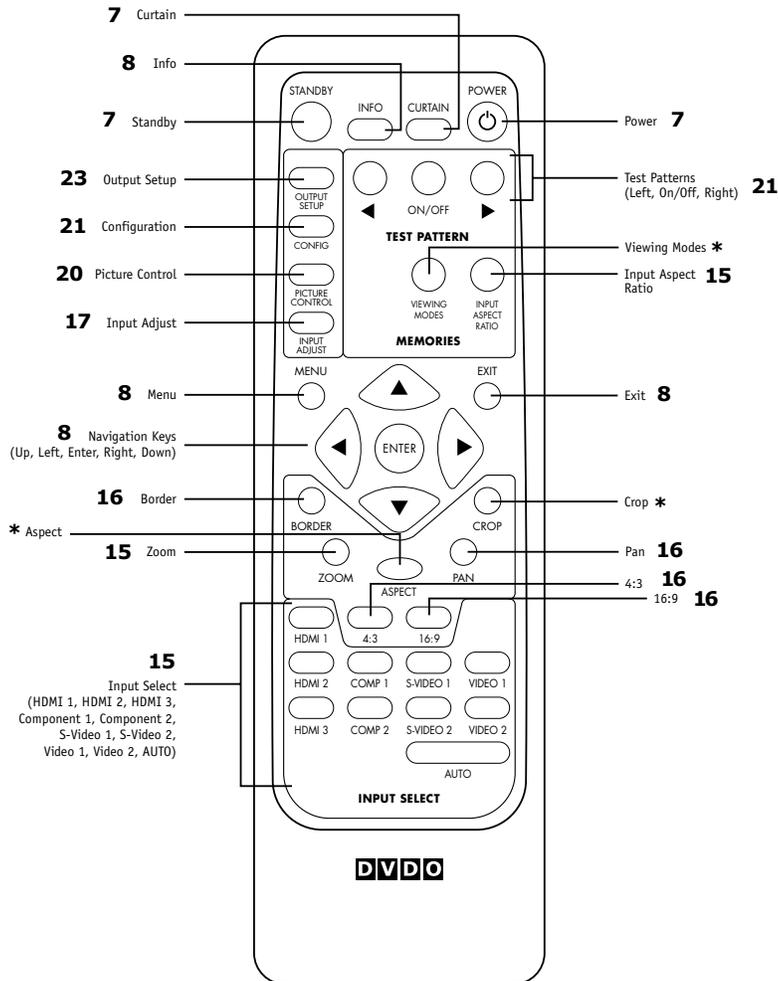
The iScan VP20 accepts digital audio sourced from DVD players, satellite receivers, digital set top boxes, game consoles, or other digital audio devices. These inputs are compatible with most consumer digital audio formats, including CD-Audio (44.1kHz/16 bit LPCM), Dolby Digital, and DTS. The coaxial 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.

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 VP20 remote has a Power and a Standby button. The Power button always turns the iScan VP20 on and the Standby button always put the unit into Standby mode.

Curtain Button

The iScan VP20 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.

Remote Control Battery Installation

The remote control for the iScan VP20 requires two AAA batteries. These should be replaced as needed. ABT recommends Alkaline batteries because they last longer without leaking.

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 VP20 as follows:

- From the front panel controls
- From the iScan VP20 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 VP20.

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 **Right** button to select the parameter and the **Up** and **Down** buttons to change the chosen parameter. Press the **Left** 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.

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
- Output Status
- Resolution
- Frame Rate
- Line Rate
- Aspect Ratio

This screen can be helpful during troubleshooting.

Power Supply Input

The iScan VP20 comes with a 6V@5A 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 VP20. The iScan VP20 should power on and display 'DVDO iScan VP20 / Powered by ABT' on the FPD for a couple of seconds.

IMPORTANT: Use only the power supply that came with your iScan VP20, or a replacement procured directly from ABT.

SECTION 3 – SETUP

Initial Set-Up

Once you have installed the iScan VP20 into your system, you must properly configure it for the display device being driven. The iScan VP20 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 VP20's OSD is crucial, not only in allowing you to navigate the menu of the iScan VP20, 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 VP20. The iScan VP20 should power on and display 'DVDO iScan VP20 / Powered by ABT' on the FPD.

STEP 2 - Connect the iScan VP20 to your system

Displays with a DVI or HDMI Input

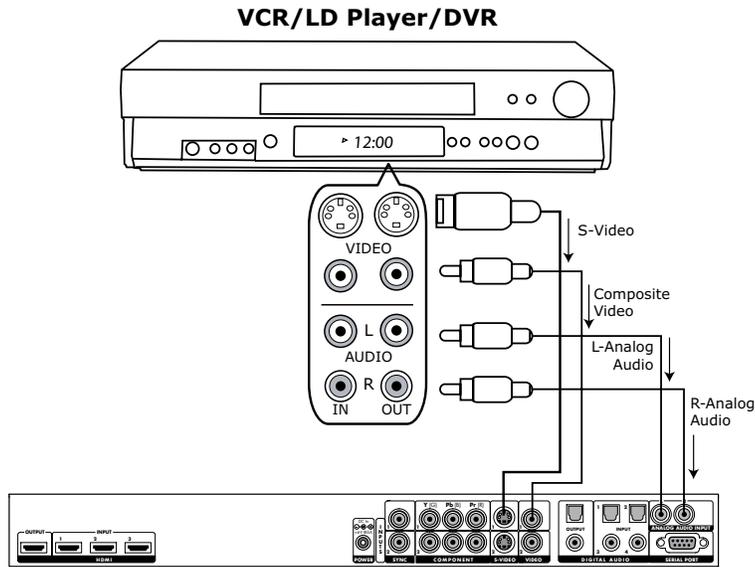
The default output on the iScan VP20 is digital RGB 4:4:4 (DVI Standard). If you have changed this setting, follow these instructions to change the settings back.

1. Press the **Menu** button on the front panel of the iScan VP20 once. You should see 'Main Menu / Input Select' on the FPD.
2. Press the **Up** button twice. You should see 'Main Menu / Configuration' on the FPD.
3. Press the **Right** button. You should see 'Configuration / Test Pattern' on the FPD.
4. Press the **Down** button until you see 'Configuration / Factory Default' on the FPD.
5. Press the **Right** button and you should see 'Factory Default / No'. Press the **Down** 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 VP20's On Screen Display (OSD) on your screen.

STEP 3 - Connecting Your Sources to the iScan VP20

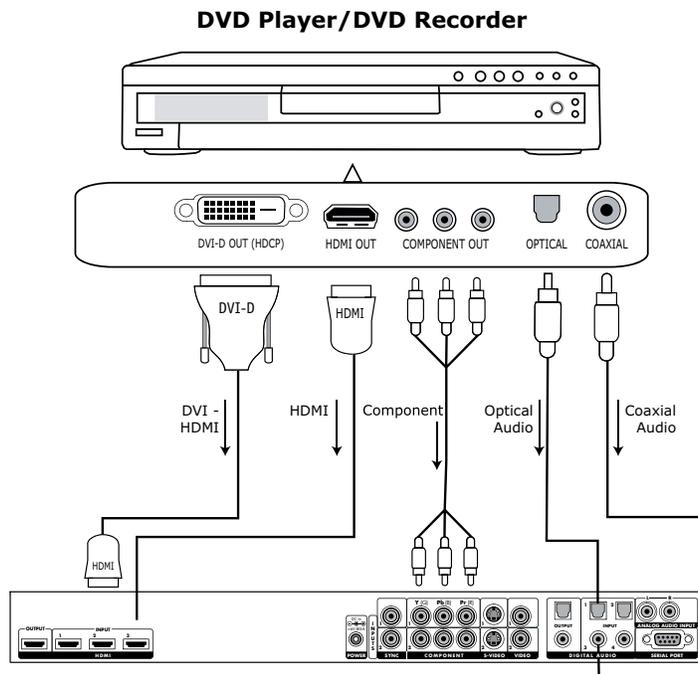
Up to 9 video sources can be connected to the iScan VP20. Use the following suggestions for connections to several popular video sources.

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.

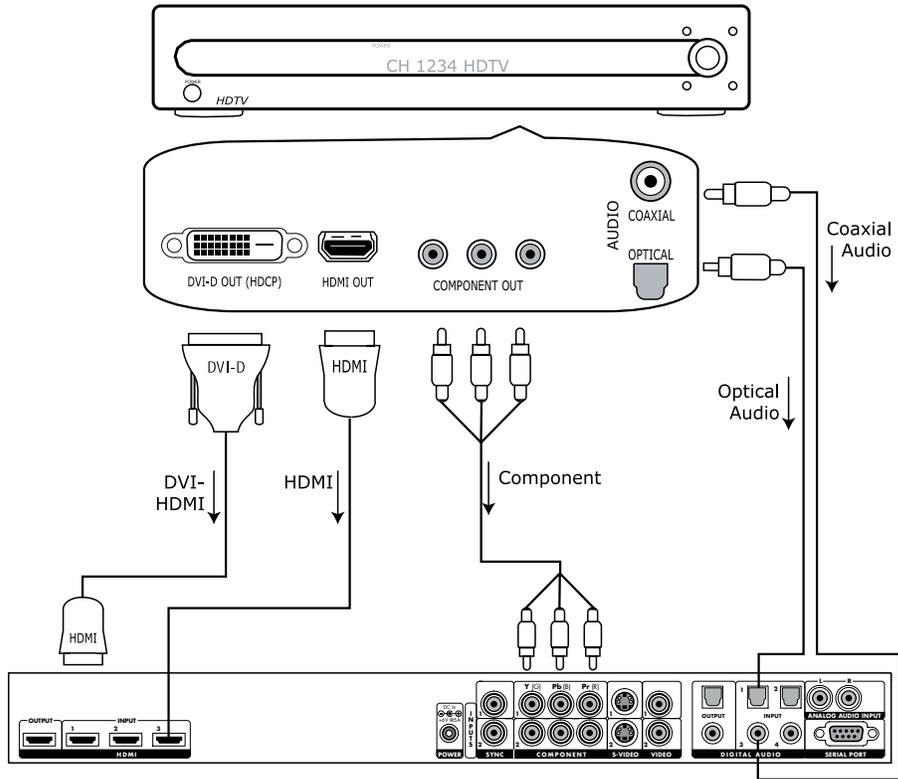
DVD Player/DVD Recorder



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.

High-Definition Set Top Box or DVR/D-VHS

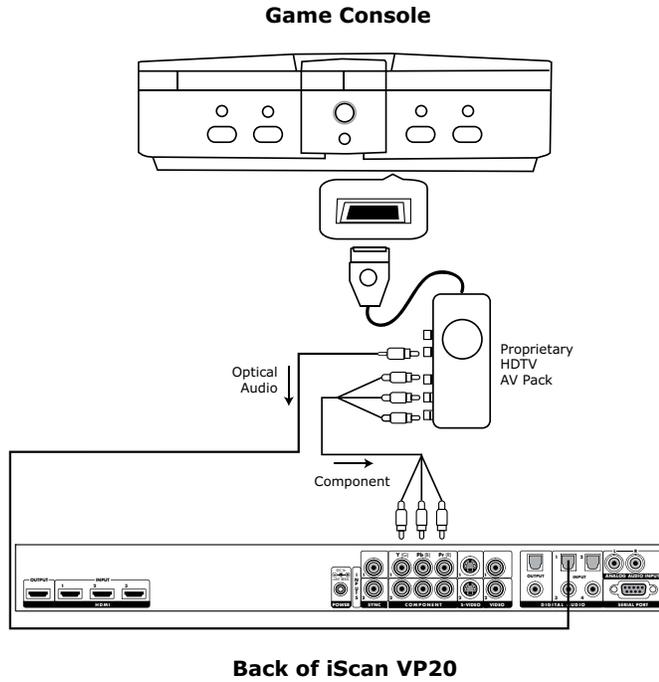
High-Definition Set Top Box or DVR/D-VHS



Back of iScan VP20

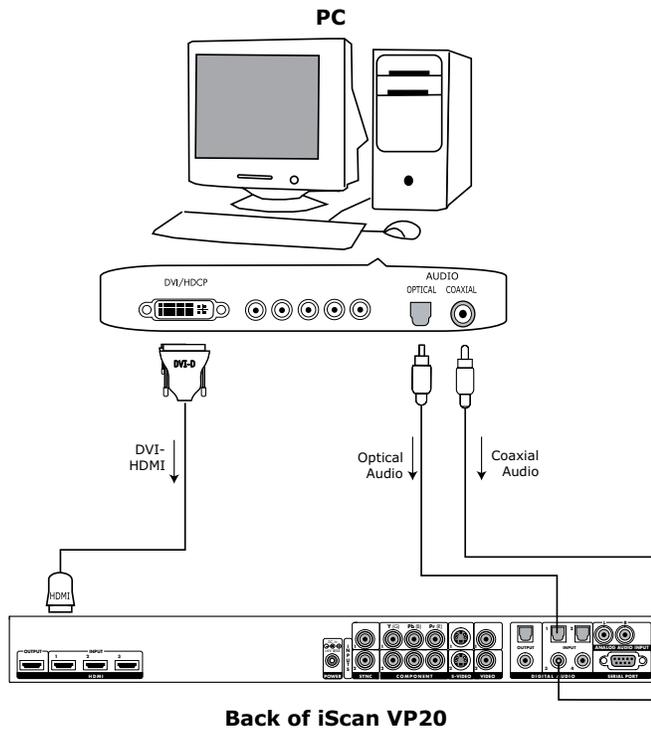
NOTE: Some set top boxes require you to switch the output resolution. This means that if you are watching an HD channel you must manually switch the output resolution to 720p/1080i, or if you are watching an SD channel, you must manually switch the output resolution to 480i or 480p, 480i preferably.

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) resolutions are supported at 60Hz.

Audio Operation

The iScan VP20 features an audio delay function to exactly match the video delay incurred by the video processing. The iScan VP20 accepts four discrete digital audio inputs, two optical (Audio 1, 2) and two coaxial (Audio 3 and 4) inputs, one analog audio input and three HDMI audio inputs. The locations of the audio inputs are shown on the back panel diagrams earlier in this product guide.

The factory default audio assignment is as follows:

Audio 1 (optical): Component 1
Audio 2 (optical): S-Video 1
Audio 3 (coaxial): S-Video 2
Audio 4 (coaxial): Component 2
Stereo (analog): Video 1

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 a Digital Audio input to each Video input in the following manner:

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.

SECTION 4 – MENU OPTIONS

Input Select

There are nine video inputs on the iScan VP20:

- 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
- AUTO Automatic active input detection and selection

These inputs can be accessed in five different ways:

- Using the front panel using the **Up** and **Down** 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 VP20 automatically converts from the selected input aspect ratio to the selected output aspect ratio.

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 100%, (no zooming); the maximum zoom is 150% (zoom magnification factor of 1.5X). 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 **Up/Down** 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 **Up** and **Down** button to increase or decrease the zooming factor. Zoom can only increase 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 **Up/Down** buttons to vertically pan the image or the **Left/Right** 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 **Up** and **Down** 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 **Up** 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 **Down** 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 **Up** 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 **Down** 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, Preset 1 through Preset 10 and User.

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:

- 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:

- 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 Lip Sync

Deinterlacing

There are several deinterlacing modes available on the iScan VP20, 'Film Bias' Mode, 'Video' Mode and 'Auto' Mode. With the addition of the Precision Deinterlacing Card there are several additional modes added; 2:2 Even, 2:2 Odd, Game Mode 1 and Game Mode 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 that this weaves two adjacent fields together starting with an odd field and combining it with the following even field.*
- **Game Mode 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 VP20 is about half a frame of delay. Unlocked frame rates will increase this delay.*
- **Game Mode 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 VP20 is about one and a half frames of delay. Unlocked frame rates will increase this delay.*

**Only accessible when the Precision Deinterlacing Card is installed*

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 **Up** or **Down** button. The current level is shown.
2. Push the **Up** or **Down** 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 or 576i on the HDMI Input. 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 VP20 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 VP20's HDMI input. Some sources turn off HDCP in this case and the iScan VP20 drives a non-HDCP DVI display or an analog display.
- **On:** The iScan VP20 continuously looks for a HDCP source on its HDMI input.

NOTE: The iScan VP20 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 Frame AR

In addition to carrying audio and video, HDMI can carry other information, like aspect ratio (AR). If you would like the iScan VP20 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 VP20 to automatically set the AR based on the information on the HDMI signal, than set this setting to 'On', which is the default.

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 **Down** 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 **Up** or **Down** 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 **Down** button. 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 VP20 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 **Up** or **Down** 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 **Up** or **Down** button to increase or decrease the delay in milliseconds.

NOTE: The total audio delay cannot be less than zero, 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 zero.

Picture Controls

For each input there are different picture memories for each accepted input resolution.

Brightness

This control adjusts the brightness (black level) of the overall image output from the iScan VP20. 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 VP20 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 VP20 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 **Down** and **Up** buttons to adjust the phase and observe the effects on your display to obtain the optimal setting. The default is 0.

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 VP20 has 13 internal test patterns to assist in the setup of your individual sources and your display. To learn more about how to use the internal test patterns, refer to the section **Setting up an iScan VP20 Using the Internal Test Patterns and the AVIA 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 VP20 is always in Active mode, regardless of the activity state of the selected input. If Auto Standby is 'On', the iScan VP20 goes into Standby mode 30 seconds after the selected input becomes inactive. To see the current setting, press **Up** or **Down**. 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. In 'Advanced' user mode, you have access to the complete set of output timing controls. Push the Down button to see the current setting and the FPD displays either 'Normal' or 'Advanced' user level. Push the **Down** button again to select the alternate mode.

Serial Port Rate

The serial port is used by the automation system controllers to control the iScan VP20. The serial port baud rate defaults to 19200 bps, but can be changed using the **Up** or **Down** 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 **Up** or **Down** 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 (CUEC) : 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
- Digital Audio Input Assignment
 - Component 1 - Audio 1
 - Component 2 - Audio 4
 - S -Video 1 - Audio 2
 - S -Video 2 - Audio 3
 - Video 1 - Analog
 - Video 2 - Off
 - HDMI 1 - HDMI 1
 - HDMI 2 - HDMI 2
 - HDMI 3 - HDMI 3

Software Update

Use this parameter to install the latest software into your iScan VP20. 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

Output Status

- Resolution
- Frame Rate
- Line Rate
- Aspect Ratio

This screen is helpful during troubleshooting.

Output Setup

Output Format

Push the Down to show the current output format. Push the Down 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

Horizontal Resolution	Vertical Resolution	Scan Type
720	480	P
1920	540	P
720	576	P
1280	720 (720p-50)	P
1280	720 (720p-60)	P
1920	1080 (1080i-50)	I
1920	1080 (1080i-60)	I
1920	1080 (1080p-50)	P
1920	1080 (1080p-60)	P
640	480	P
1024	768	P
852	480	P
1366	168	P
1280	168	P
1024	1024	P
1024	576	P
1360	768	P

Output Aspect Ratio Control

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

- 4:3
- 16:9

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 four sync types:

- **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. Press the **Up** or **Down** button to show the current color space. Press the same button again to select the alternate color space. 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)

Framerate Conversion

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

For 50Hz sources, the output frame rate can be either 50Hz or unlocked at 60Hz, which allows the user to view PAL/SECAM content on an NTSC display.

For 60Hz sources, the output frame rate can be either 60Hz or unlocked at 50Hz, which allows the user to view NTSC content on a PAL/SECAM display.

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 Up or Down button. The current level is shown. The default value is '0'. Push the Up or Down button to decrease or increase the border level.

HDCP Mode

There are two HDCP modes:

- **Off:** HDCP is disabled at the iScan VP20's HDMI output.
- **On:** The iScan VP20 continuously looks for a HDCP display device on its HDMI output.

NOTE: The iScan VP20 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'

Non-Volatile Memory Settings

The iScan VP20 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
Active Input	One of many VP20 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
Test Pattern Generator	Current selected test pattern
Serial Port Bit Rate	Select an available baud rates.

Input/Format Settings

The iScan VP20 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)
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
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
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

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	
Audio Select		Audio 1 - 4, Analog, HDMI
Audio Delay		
Overscan		
VCR Mode		
Deinterlacing		
Input AR Preset		Preset 1-10 or User Preset
User Preset	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 presets (Preset 1 through Preset 10) for the whole system. However the User Preset is per input and per format.

Setting up an iScan VP20 Using the Internal Test Patterns and Avia: Guide to Home Theater Calibration DVD

The iScan VP20 has 13 built-in test patterns to assist in the setup of your display and your individual sources. ABT recommends that you use the Avia: Guide to Home Theater DVD to assist in this setup. This DVD can be purchased directly from DVDO at <http://www.dvdo.com/companion/avia.php>.

Determining the Correct Output Resolution for Your Display:

Determine the optimum output resolution to set your iScan VP20 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. 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 VP20 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 VP20 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 VP20 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.

A small amount of displays will not allow the user to achieve 1:1 pixel mapping (bypass the internal processing) at the displays' documented native resolution. According to the information on Fujitsu's web site, the native resolution of the Fujitsu 50" plasma (Model P50XHA10US) is 1366x768.

50" diagonal screen size
AVM Digital Video Processor
1366 x 768 native resolution
3000:1 contrast ratio
3.9" thin and 99 pounds

Even though the specifications indicate that this 50" plasma has a native resolution of 1366x768, 1:1 pixel mapping can only be achieved with an output resolution of 1360x768 from the an iScan.

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)

NOTE: Driving a CRT display beyond its capabilities may damage your display. Please check with DVDO if you are unsure what your displays capabilities are.

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 Fujitsu 50" plasma (Model P50XHA10US) as an example. As stated above, this display can only be addressed at 1:1 pixel mapping with an output resolution of 1360x768 from an external video processor.

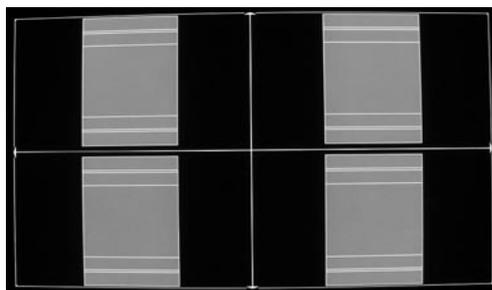
- 1 - Select the preset which is closest to the output resolution that you need. In this situation, the closest preset is 1366x768.

Output Setup ⇨ Format ⇨ 1366x768

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

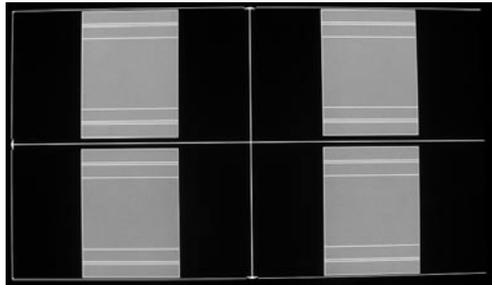
Configuration ⇨ Test Patterns ⇨ Frame Geometry

NOTE: To turn the test patterns on and off, use the Test Patterns button on your remote control. You can also navigate backwards and forwards through the test patterns, using the < and > buttons respectively.



Frame/Geometry Test Pattern Displayed Correctly (Image B)

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 (Image C)

As shown in image C, the test pattern is almost displayed correctly. You can see the 1-pixel wide white border on the top, bottom and left side of the image but not on the right side of the image. By adjusting the horizontal size of this signal to 1360 (rather than 1366), you can get this test pattern displayed correctly on the display.

To change the horizontal size of the image, you must first put the iScan in 'Advanced' user mode.

Configuration ⇨ User Mode ⇨ **Advanced**

Output Setup ⇨ Format ⇨ 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 ⇨ H-Shift ⇨ Range

Output Setup ⇨ Format ⇨ 1366x768 ⇨ 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. 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 ⇨ 50.00

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

The iScan VP20 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-than-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 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.

AVIA 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 AVIA DVD to adjust the picture controls on this input. If you are not familiar with how to make these adjustments, watch the guided setup first, and then make each adjustment. You can find the guided setup by clicking 'Advanced AVIA' from the main menu, and then selecting 'Basic Video Adjustments' on the following menu page. 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 AVIA DVD that can be used in conjunction with the built-in test patterns of the iScan to verify the settings are correct.

Access these as follows:

1. After inserting the AVIA DVD into your DVD player, press the 'top menu' button to bring up the main menu.
2. From the main menu, select 'Advanced AVIA'.
3. On the right hand side of the 'Calibrations' menu page select 'Video Test Patterns'.
4. From the 'Video Test Patterns' menu, select 'Gray Scale & Levels'.
5. From the 'Black and White Levels' menu, select the 'Needle Pulses' test pattern. This is to be used with the 'Half B/W' internal test pattern from the iScan.
6. Once you have adjusted brightness and contrast, go back to the 'Video Test Patterns' menu and select 'Color Adjustment'.
7. From the 'Color Adjustment' menu, select 'Special Color Bars'.

Use the 'Full Bars' test pattern in conjunction with the 'H-Clr7 Bars75' internal test pattern from the iScan.

Use the 'Full 100 Bars' with the 'H-Clr7 Bars100' internal test pattern.

Record Your Settings

Once you have set up your iScan, 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 VP20'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-than-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 VP20'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 VP20'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 VP20 shows an error message.

If the iScan VP20 does not boot correctly, you may get an error message. Performing a hard reset of the iScan VP20 should clear any memory. If you still get an error message after performing a hard reset, contact our Technical Support department for service.

- Perform a hard reset of the iScan VP20:
 - 1 - Unplug the power from the back of the unit
 - 2 - Wait 5-10 seconds
 - 3 - Reinsert the power plug back into the back of the unit

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 VP20 is digital RGB 4:4:4 (DVI Standard). 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 VP20.

A blinking blue light on the iScan VP20 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: The Green status LED blinks on the front panel of the iScan VP20.

The LED on the iScan VP20 blinks green when it is receiving an incompatible signal. If you are using component video, please verify that the connections are correct. If the signal is coming from a PC, try reducing the resolution being sent to the VP20 to a lower (standard) VESA resolution.

5. Problem: Will I lose the settings on my iScan VP20 if I update the software version?

Currently, the iScan VP20 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		
HDMI 1		
HDMI 2		
HDMI 3		
Auto		
Input Aspect Ratio		
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	
	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	
	Film Bias Mode
	Video Mode
	2:2 Even Mode
	2:2 Odd Mode
	Game Mode 1
	Game Mode 2
Overscan	Range: 0-20
Line Offset	Range: 0-30
Color Space	RGB
	YCbCr 4:2:2
	YCbCr 4:4:4
	Auto
Input Level	Video
	PC
VCR Mode	Off
	On
	Auto
HDMI Config.	HDCP Mode
	Off
	On
	Auto Frame AR
	Off
	On
	Auto Color Space
	Off
	On
Auto Priority	Range: 1-12/Off
Audio Input	Off
	Audio 1

	Audio 2
	Audio 3
	Audio 4
	Stereo
	HDMI
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
	H-Clr7 Bars75
	H-Clr7 Bars100
	H-Clr8 Bars75
	H-Clr8 Bars100
Auto Standby	
	Active
	Reduced
	Range: 0-3
	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	
Format	
	480p
	540p

	576p	
	720p-50	
	720p-60	
	1080i-50	
	1080i-60	
	1080p-50	
	1080p-60	
	640x480 (VGA)	
	1024x768 (XGA)	
	852x480	
	1366x768	
	1280x768	
	1024x1024	
	1024x576	
		Horizontal Shift
		Range:
		Vertical Shift
		Range:
Aspect Ratio		
	4:3	
	16:9	
Sync Type		
	H+/V+	
	H+/V-	
	H-/V+	
	H-/V-	
Color Space		
	RGB	
	YCbCr 4:2:2	
	YCbCr 4:4:4	
Output Level		
	Video	
	PC	
Framerate		
	50Hz	50Hz Lock
	60Hz	Unlock
	60Hz	60Hz Lock
	50Hz	Unlock
Border Level		
		Range: 0-100
HDCP Mode		
	Off	
	On	

INDEX

A

audio connections	6
audio delay function	14
audio input function	20
audio inputs	6
auto input priority selection function	19
auto standby	21
AV lip sync	20

B

battery installation	8
border level setting	24
borders function	16
brightness	20

C

chroma filter	21
color space	19
compatibility requirements	3
complete menu tree	35
configuration	21
contrast	20
curtain button	7

D

deinterlacing	18
display calibration	30
display compatibility requirements	3

F

factory default	22
features	2
framerate conversion	24
front panel display (FPD)	5

G

game console	13
--------------	----

H

HDCP mode	19, 24
hue	20

I

info screen	8
input adjustment controls	17
input aspect ratio control	15
input/format settings	25
installation guidelines	4

L

line offset function	18
----------------------	----

M

menu navigation	8
-----------------	---

N

non-volatile memory	25
---------------------	----

O

output aspect ratio control	24
output setup	23
overscan function	18

P

package contents	3
pan function	16
picture controls	20
power supply	9
presets	16

R

rear panel overview	5
remote control overview	7

S

saturation	20
serial port baud rate	22
set-up	10
sharpness	21
software update	23
sync type	24
system settings	25

T

test patterns	21, 28, 32
troubleshooting	34

U

user mode	21
-----------	----

V

VCR mode	19
video inputs	6
video outputs	6

Z

zoom function	15
---------------	----



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