



kaleidescape

HDMI and the Kaleidescape System

Technical Note

A High-Definition Multimedia Interface® (HDMI®) connection is required to take full advantage of the advanced audio and video capabilities of Kaleidescape players. This document explains the benefits of an HDMI connection, the process used to establish this connection, and basic troubleshooting steps.

Benefits of HDMI

HDMI is the industry standard for connecting high-definition video and high-resolution audio equipment. The HDMI connection on a Kaleidescape player offers the following benefits.

- ▶ HDMI allows Kaleidescape players to upscale DVD content to 720p, 1080i, or 1080p. (DVD CCA licensing terms prohibit sending upscaled DVDs over analog outputs, e.g., component video.)
- ▶ HDMI output must be used to benefit fully from the video processing capability of a Kaleidescape player.
- ▶ 1080p video and 24 frame per second playback of Blu-ray quality movies is available only with an HDMI connection.
- ▶ Bitstream pass-through of uncompressed, lossless audio codecs such as DTS-HD Master Audio™, Dolby Atmos®, Dolby TrueHD™ and multichannel linear PCM is available only via HDMI.
- ▶ With a 1080i or 1080p HDMI connection, the onscreen user interface can be output to a projector in one of three CinemaScope 2.35 modes.
- ▶ High-resolution audio can be delivered along with high-definition video using a single HDMI cable, which simplifies installation and configuration.
- ▶ Kaleidescape players automatically determine the best video configuration settings using information received from the display device over HDMI. This means default settings rarely need to be changed.

HDMI Terms

An HDMI signal often passes through multiple components when travelling from a Kaleidescape player to a display device. To help understand how an HDMI signal works and where it can break down, it is important to define a few common terms that will be used throughout this document.

Source – A device that sends an HDMI signal, such as a Kaleidescape player or a cable or satellite box.

Sink – A device that receives an HDMI signal, such as a monitor or an HDTV.

Repeater – A device that both receives and sends HDMI signals, such as an A/V receiver or processor, a switcher, or a splitter.

Extender – A device that boosts an HDMI signal when travelling longer distances.

Path - All devices the HDMI signal must pass through when travelling from the source to the sink.

Understanding HDCP

High-bandwidth Digital Content Protection, or **HDCP**, is a copy control method. When a source is connected to a sink, the two devices exchange authentication information across the entire path to check that the transmission of audio and video between the devices is permitted.

If the sink cannot authenticate itself, the source is not permitted to send content, even at a lower resolution. There is greater chance this happens as the number of devices the HDMI signal must pass through increases – simplify the path whenever possible.

HDMI ports must support HDCP, but this is optional for DVI ports. When a display device has both HDMI and DVI inputs, use the HDMI input, rather than an HDMI-to-DVI adapter.

HDCP Repeater Device Limit

Sources must recognize the HDCP encryption keys from all downstream devices, including repeaters, extenders and sinks. For example, a source connected to a splitter connected to four televisions must be able to recognize five keys: four from televisions and one from the splitter.

Alto, Cinema One (2nd generation) and M-Class players support up to 16 downstream devices.

Understanding EDID

Extended Display Identification Data, or **EDID**, is a data structure provided by a sink to describe its capabilities to a source. The data includes essential information about the sink such as manufacturer, supported and preferred video resolutions, and supported audio modes. When multiple components are present in the path (e.g., a player connected to a splitter connected to an extender connected to an A/V receiver connected to a display device), the EDID from all the devices is combined. Taking into consideration the capabilities of all these devices, a Kaleidescape player can determine what video signal and sound format to send without the user needing to configure settings manually.

In rare cases, inaccurate EDID or an EDID that was corrupted by a switcher or an extender may result in no picture or sound, or a signal that is less than optimal. If needed, the EDID can be ignored by manually configuring the video and/or audio settings of the Kaleidescape player.

Connecting the Kaleidescape Player using HDMI

Use the following guidelines when connecting a Kaleidescape player via HDMI.

1. Update the firmware for each component in the path – display devices, A/V receivers or processors, repeaters, switchers, extenders – to the latest version. Updates often improve HDMI connection reliability.
2. Verify that all cables are certified High Speed cables.

Certified High Speed cables have been tested to successfully handle 1080p signals and beyond. Uncertified or Standard Speed cables might only handle a 720p or 1080i signal.

3. Use a dedicated HDMI input rather than a HDMI-to-DVI adapter if possible. DVI does not support audio, and is more prone to issues with HDCP.
4. Set the sharpness on the display device for the input used by the Kaleidescape player as low as possible. Disable any edge enhancement setting in the display.
5. Set the display device for 1:1 pixel mapping by selecting the dot-for-dot, pixel-by-pixel, or equivalent viewing mode. This setting helps prevent the display from scaling the video image. Scaling video images twice typically degrades picture quality.

Configure Optimal Video Settings

The following steps help verify that the Kaleidescape player is configured in the default mode before determining if these settings need to be adjusted.

Alto or Cinema One

Video settings are configured in the onscreen user interface on Alto or Cinema One (2nd generation).

Check Default Settings

1. Press the **Menu** button on the Kaleidescape remote, or press **Menu** on the *Remote Control* page of the Kaleidescape iPad app.
2. Use the arrow buttons and highlight **System**, and then select **Settings**.
3. Select **Video**. The *Settings: Video* page opens.
4. Select **Video Mode** and set the **Video Resolution** to **Use highest available** if not already configured this way. See Figure 1.

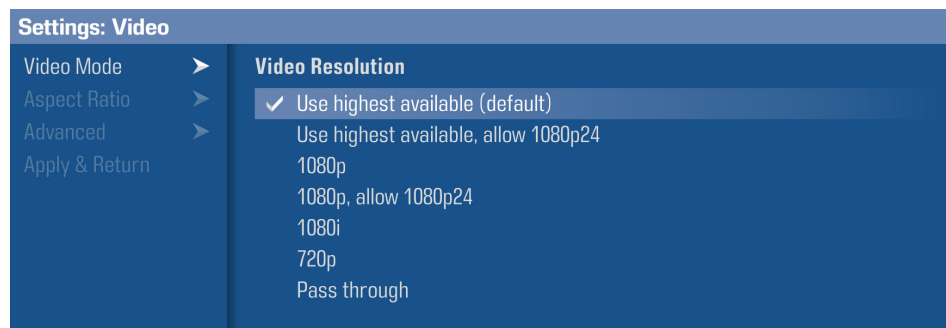


Figure 1 Video Resolution for Alto or Cinema One

5. Return to the left column and select **Aspect Ratio**. By default, this is set to **16:9**. In most installations this will not change, but when connecting to a projector, the aspect ratio may be set to one of the CinemaScope 2.35 modes. Refer to the [CinemaScope Technical Note](#) for guidance in choosing the correct mode.
6. Return to the left column and select **Advanced**.
7. Make sure there is a check in the box next to **Enable detail enhancement**. See Figure 2.

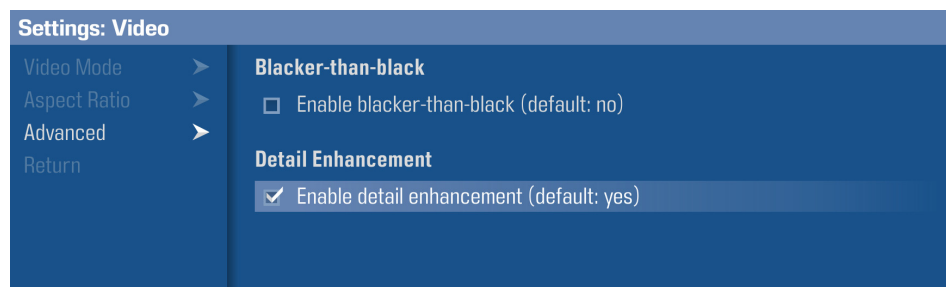


Figure 2 Detail Enhancement for Alto or Cinema One

8. To save any changes, move to the left column and select **Apply & Return**. Confirm the change by selecting **Apply Changes**. If the settings look correct, select **Keep new video settings**.

Override Default Configuration

If the default settings do not produce the desired results, manually configure the Kaleidescape player to output the desired resolution.

1. Return to the *Settings: Video* page and select **Video Mode**.
2. Under **Video Resolution** choose the desired resolution. See Table 1.

Table 1 Description of Video Modes on Alto and Cinema One

Video mode	Is EDID Ignored?	What resolution is output?
Use highest available (default)	No	Preferred resolution as specified in the EDID.
Use highest available, allow 1080p24	No	Preferred resolution as specified in the EDID. Blu-ray movies filmed at 1080p24 will output at 1080p24 (assuming the EDID advertises support for it).
1080p	Yes	1080p50/60
1080p, allow 1080p24	Yes	1080p50/60. Blu-ray movies filmed at 1080p24 will output at 1080p24
1080i	Yes	1080i50/60
720p	Yes	720p50/60
Pass through	Yes	The original, or native, resolution of the movie. Use this mode when using an external scaler to perform the video processing.

Note: When choosing the desired resolution, take into consideration the supported and preferred resolutions of the display device and all devices in the HDMI path. If all devices do not support the desired resolution, picture may not appear or the image may be distorted.

3. When using a PAL display the onscreen menus can be output at 50Hz by checking the box next to **Use 50Hz onscreen menus** in the **PAL Display Support** section.
4. Return to the left column and select **Advanced**.
5. If you want to disable detail enhancement, remove the check from the box next to **Enable detail enhancement**.
6. To save any changes, move to the left column and select **Apply & Return**. Confirm the change by selecting **Apply Changes**. If the settings look correct, select **Keep new video settings**.

M-Class Players

Video settings are configured in the browser interface on a Premiere line system. The browser interface must be accessed from a computer on the same network as the Kaleidescape system.

Check Default Settings

1. Open a web browser and enter:
 - <http://my-kaleidescape> (Windows)
 - <http://my-kaleidescape.local> (Mac)Or
 - [http://\[server_IP_address\]](http://[server_IP_address]) (Windows or Mac)

If a login page appears, enter the password and select **Login**. The *HOME* page appears.

2. Select the **SETTINGS** tab.
3. Select **Components** from the new row of headings that appear.
4. Locate the player and select the **Settings** button on the right.
5. Select the **VIDEO** tab.
6. In the top section, check that the **Primary Video Output** is set to **HDMI**. See Figure 3.

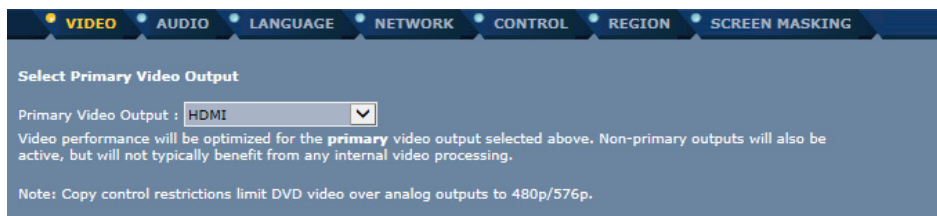


Figure 3 Setting the Primary Video Output

7. In the **Select Screen Aspect Ratio** section, the default setting is **16:9**. In most installations this will not change, but when connecting to a projector, the aspect ratio may be set to one of the CinemaScope 2.35 modes. Refer to the [CinemaScope Technical Note](#) for guidance in choosing the correct mode.
8. In the **Select Video Mode for each Media Format** section, verify that all **Media Formats** are set to **Use Highest Available Resolution**. See Figure 4.



Figure 4 Setting the Media Formats

9. Click **Show Advanced Video Settings**. The advanced video settings appear.
10. In the **Select Detail Enhancement for HDMI Video** section, verify that **Low** is selected. See Figure 5.

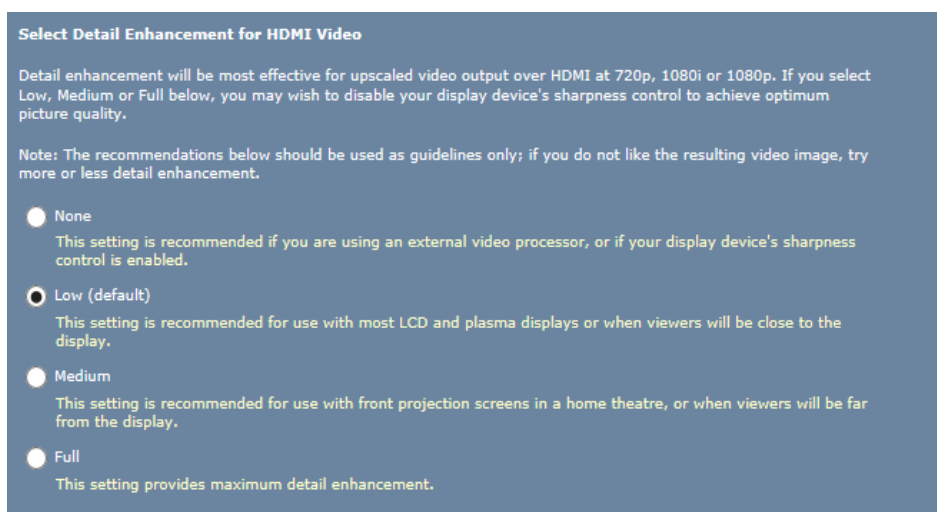


Figure 5 Detail Enhancement for HDMI Video Settings

Note: The detail enhancement setting is only available if HDMI is selected as the primary video output.

11. Click **OK** to save any changes to the video settings.

Note: The player does not need to be restarted. If changes are made during playback, stop and restart the movie to see the results.

Override Default Configuration

If the default settings do not produce the desired results, manually configure the Kaleidescape player to output the desired resolution.

1. Return to the *VIDEO* tab, and in the top section, check that the **Primary Video Output** is set to **HDMI**.
2. In the **Select Video Mode for each Media Format** section, choose the desired resolution from the pull-down menu for each **Media Format**. See Table 2.

Table 2 Description of Video Modes on M-Class Players

Video mode	Is EDID Ignored?	What resolution is output?
Use Highest Available Resolution (default)	No	Preferred resolution as specified in the EDID.
Use Highest Available (allow 1080p24)	No	Preferred resolution as specified in the EDID. Blu-ray movies filmed at 1080p24 will output at 1080p24 (assuming the EDID advertises support for it).
1080p50, 1080p60, 1080i50, 1080i60, 720p50, 720p60, 576i, 576p, 480i, 480p	Yes	1080p50, 1080p60, 1080i50, 1080i60, 720p50, 720p60, 576i, 576p, 480i, 480p
1080p (allow 1080p24)	Yes	1080p50/60. Blu-ray movies filmed at 1080p24 will output at 1080p24.
Do Not Play	Yes	The media format will not play.
Pass through	No	The original, or native, resolution of the movie (assuming the EDID advertises support for it).
Pass through (ignore display capabilities)	Yes	The original, or native, resolution of the movie.

Note: When choosing the desired resolution, take into consideration the supported and preferred resolutions of the display device and all devices in the path. If all devices do not support the desired resolution, picture may not appear or the image may be distorted.

3. Click **Show Advanced Video Settings**. The advanced video settings appear.
4. In the **Select Detail Enhancement for HDMI Video** section, choose the desired level of detail enhancement. When using an external scaler to perform the video processing, choose **None**.

Note: This setting takes effect immediately during playback, which allows several settings to be tried in quick succession to determine the best level.

5. Click **OK** to save any changes to the video settings.

Multichannel Audio

The HDMI connection on Kaleidescape players can be configured in one of two modes. **Bitstream pass-through** sends the unaltered audio track for decoding in an A/V receiver or processor. **Player decode** processes the audio track and sends 48kHz PCM up to 5.1-channels.

Alto or Cinema One

Audio settings are configured in the onscreen user interface on Alto or Cinema One (2nd generation).

1. Press the **Menu** button on the Kaleidescape remote, or press **Menu** on the *Remote Control* page of the Kaleidescape iPad app.
2. Use the arrow buttons and highlight **System**, and then select **Settings**.
3. Select **Audio**. The *Settings: Audio* page opens.
4. Select **Audio Mode**.
5. Under **HDMI Audio** choose the audio mode. See Figure 6.

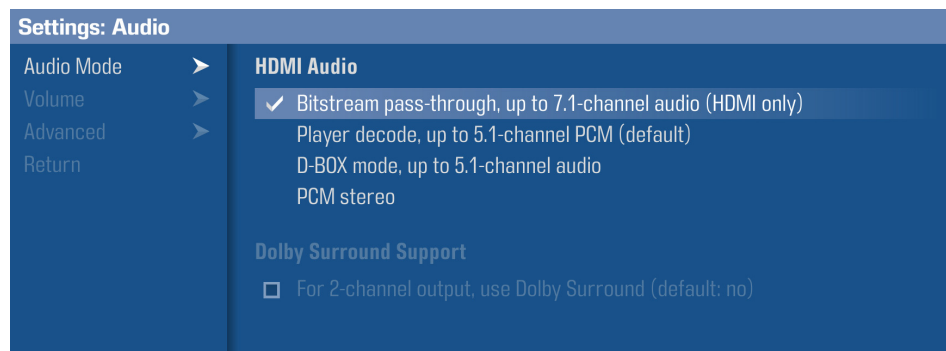


Figure 6 Choose the Audio Mode

A description of the different audio modes is listed in Table 3.

Table 3 Description of HDMI Audio Modes on Alto and Cinema One

Audio mode	What audio format is output over...		
	...HDMI?	...Coax?	...Analog?
Bitstream pass-through, up to 7.1-channel audio (HDMI only)	Original movie audio track (including lossless Blu-ray formats)	None, it is disabled.	None, it is disabled.
Player decode, up to 5.1-channel PCM (default)	PCM up to 5.1-channels	Dolby Digital or DTS (up to 5.1-channel)	2-channel PCM
D-BOX mode, up to 5.1-channel audio	Dolby Digital or DTS (up to 5.1-channel)	Dolby Digital or DTS (up to 5.1-channel)	2-channel PCM
PCM stereo	2-channel PCM	2-channel PCM	2-channel PCM

Note: Secondary audio, such as disc menu sounds and picture-in-picture audio, will not be heard when **Bitstream pass-through, up to 7.1-channel audio (HDMI only)** is selected.

Note: When choosing the audio mode, take into consideration the supported audio modes of all devices in the path. If all devices do not support the audio mode, sound may not be heard or it may be distorted.

- When Dolby Surround encoding is required, check the box next to **For 2-channel output, use Dolby Surround**. See Figure 7.

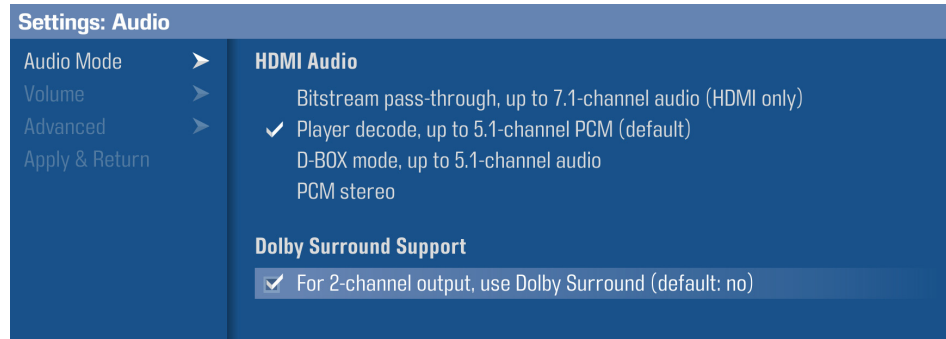


Figure 7 Choose the Audio Mode

Note: The audio mode must be set to **Player decode** or **PCM stereo** to enable Dolby Surround encoding.

- To save any changes, move to the left column and select **Apply & Return**. Confirm the change by selecting **Apply Changes**.

Ignore the EDID

When a particular audio format is not output, there is likely inaccurate EDID or an EDID that was corrupted. If needed, the EDID can be ignored by the Kaleidescape player.

- Return to the *Settings: Audio* page and select **Advanced**.
- Under **HDMI Capability Override** select **Receiver supports all audio formats**. See Figure 8.

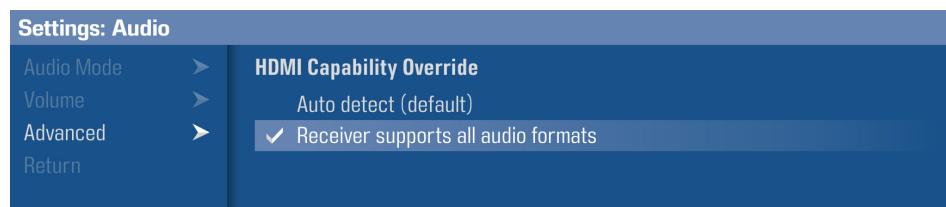


Figure 8 HDMI Capability Override

Note: If not all devices support all audio formats, sound may be inaudible or distorted during play back of one or more audio formats.

- To save any changes, move to the left column and select **Apply & Return**. Confirm the change by selecting **Apply Changes**.

M-Class Players

Audio settings are configured in the browser interface on a Premiere line system. The browser interface must be accessed from a computer on the same network as the Kaleidescape system.

1. Open a web browser and enter:
 - <http://my-kaleidescape> (Windows)
 - <http://my-kaleidescape.local> (Mac)Or
 - [http://\[server_IP_address\]](http://[server_IP_address]) (Windows or Mac)

If a login page appears, enter the password and select **Login**. The *HOME* page appears.

2. Select the **SETTINGS** tab.
3. Select **Components** from the new row of headings that appear.
4. Locate the player and select the **Settings** button on the right.
5. Select the **AUDIO** tab.
6. Choose the **HDMI audio decode mode**. See Figure 9.

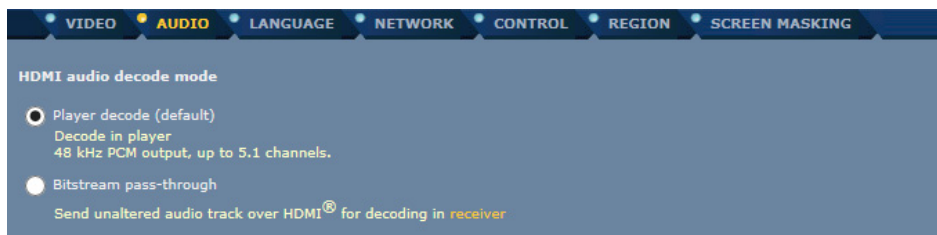


Figure 9 Choosing HDMI Audio Decode Mode

Select **Player decode** to hear Blu-ray secondary audio, or when coaxial, optical or analog audio outputs are used. **Player decode** sends 48 kHz PCM output over HDMI, up to 5.1 channels depending on the content.

Select **Bitstream pass-through** to send Blu-ray sound tracks over HDMI at the highest bandwidth possible (up to 192 kHz or 7.1 channels).

The lossless audio formats available on Blu-ray movies, such as Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and 7.1-channel PCM, exceed the capabilities of coaxial, optical and analog audio outputs. These formats are output without alteration only over HDMI, and only when using the **Bitstream pass-through** mode.

Note: Blu-ray secondary audio, such as disc menu sounds and picture-in-picture audio, will not be heard when **Bitstream pass-through** is selected.

7. Click **OK** to save any changes to the audio settings.

Ignore the EDID

When a particular audio format is not output, there is likely inaccurate EDID or an EDID that was corrupted. If needed, the EDID can be ignored by the Kaleidescape player.

1. Return to the *AUDIO* tab and select **Show Advanced Audio Settings**.
2. In the **HDMI capability override** area, configure each audio format. See Figure 10.

	Auto detect (default)	Receiver supports	Receiver does not support
PCM 7.1 Channel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
PCM 5.1 Channel	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
DTS-HD [®] MA, DTS-HD HRA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dolby TrueHD	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dolby Digital Plus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
DTS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dolby Digital	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 10 HDMI Capability Override

When **Auto-detect** is selected, the Kaleidescape player outputs the audio format only when the EDID advertises support for it. When you are certain the audio format is supported, select **Receiver supports**. When you are certain the audio format is not supported, select **Receiver does not support**.

Note: If not all devices support an audio format, sound may be inaudible or distorted during play back of that audio format.

3. To always output D-BOX compatible Dolby Digital or DTS over HDMI, optical, and digital coax, select **Enable** in the **D-BOX mode for movies** area.
4. Click **OK** to save any changes to the audio settings.

Troubleshooting

Use the following information to troubleshoot common problems encountered with an HDMI connection.

Problem	Probable Cause	Solution
No image is present, display device reports no signal, or image flickers during playback	1. Damaged or defective cable	Replace cable.
	2. Display device is set for another resolution.	If display has a resolution setting, set to automatic or set correctly manually.
	3. HDCP failure	<ul style="list-style-type: none"> Confirm display device supports HDCP. Update display device firmware, if possible. Use direct HDMI connection rather than DVI adapter.
	4. Cable is too long.	Test with a shorter High Speed HDMI cable. If successful, investigate extenders and/or repeaters.
Image appears heavily pixelated or blocky	Display device is improperly processing image aspect ratio.	Set aspect ratio to dot-for-dot, pixel-by-pixel , or equivalent.
A line appears in the image (often green or white)	Display device is processing image aspect ratio improperly.	Set aspect ratio to dot-for-dot, pixel-by-pixel , or equivalent.
Movie image disappears repeatedly, and eventually disappears completely.	HDCP failure	<ul style="list-style-type: none"> Confirm display device supports HDCP. Update display device firmware, if possible. Try a different cable. Use a splitter or extender that reclocks the signal. Insert between the player and display.
The image appears for the Kaleidescape onscreen user interface, but not for DVD and Blu-ray quality movies	HDCP failure	<ul style="list-style-type: none"> Confirm display device supports HDCP. Update display device firmware, if possible. Try a different cable. Use a splitter or extender that reclocks the signal. Insert between the player and display. Use direct HDMI connection rather than DVI adapter.

Problem	Probable Cause	Solution
No audio from HDMI cable when connected to stereo-only equipment during DTS sound track.	Non-M-Class players do not down mix DTS to stereo.	Select SETTINGS > Components in the browser interface, click the Settings button for the player, select the AUDIO tab. Change Select your preferred audio track when playing a movie to Dolby Digital .
Audio from HDMI cable is stereo, but multichannel audio is desired.	A non-M-Class player was installed prior to kOS 3.7, and multichannel audio using HDMI has not yet been enabled.	Select SETTINGS > Components in the browser interface, click the Settings button for the player, select the AUDIO tab. Enable Multichannel Audio Using HDMI . Ignore the EDID and always output bitstream by selecting Always Send Multichannel Audio .

Kaleidescape Support

For additional information about HDMI and the Kaleidescape System, contact Kaleidescape Support.

- ▶ Send email message to support@kaleidescape.com.
- ▶ Call the support line at **+1 (650) 625-6160**.

Be prepared to provide the serial number of the Kaleidescape server (located on the back of the server). Serial numbers are printed on labels located on the backs of all components and behind the front panels of 3U and 5U Servers.

The Kaleidescape website always has the latest support updates.

<http://www.kaleidescape.com>