

Maker **Aurora Multimedia** wants to share insight into the most common HDMI pitfalls that cause installers grief. Not meant to be an exhaustive list of all possible (you know HDMI just invents these tricks) , this advice demarcates some of the most common issues to address before the install—to save time, money and keep everyone happy (especially the customer).

Aurora also present ways of utilizing specific Aurora HDMI converters and extenders to eliminate the need for legacy analogue signal based systems.

EDITOR'S NOTE: in fairness to other manufacturers, some of the advice is Aurora-specific.

For example, where Aurora says, *"Use CAT6 unshielded solid core for new installs as it will give you the greatest distance. Uses shielded only when the environment calls for it (due to interference) and then remember to ground only one end of the shield."*

We asked Nick Mawer of Kramer Electronics, as an example of another manufacturer, what his company might recommend. He says Kramer would recommend Cat 6 cable with each pair individually shielded. "This would reduce chances of crosstalk."

When Aurora says, *"Try to use dual cable CAT extenders as it can be powered from one end. It is also a much lower cost to run the extra cable versus a single cable version which usually costs 50% more."*

From Kramer's point of view, "Single CAT extenders can be powered from one end. In the case of Kramer Electronics, our single CAT cables are in fact cheaper than our dual CAT versions."

So different manufacturers have different HDMI solutions. ECI are publishing this HDMI article as it is still helpful insight. But please be sure to recognize this is HDMI background from the point of view of a single manufacturer (in this case, that's Aurora Multimedia).

I. Most Common HDMI Issues *by Aurora Multimedia Inc.*

HDMI Extenders

- When using CAT extenders, keep in mind the higher the resolution the less distance you will get. 1080p will not go nearly as far as 480p so always get the distance specification for the resolution you will be using. Most extenders list their best distance at the lower resolution.

- Use CAT6 unshielded solid core for new installs as it will give you the greatest distance. Uses shielded only when the environment calls for it (due to interference) and then remember to ground only one end of the shield.
- Try to use dual cable CAT extenders as it can be powered from one end. It is also a much lower cost to run the extra cable versus a single cable version which usually costs 50% more.

HDMI Matrix, Switchers, Distribution Amps

- If an output has a DVI destination device, make certain to use an HDMI-to-DVI audio converter between the HDMI output and the destination. Since the HDMI source device will output HDMI if it learns the EDID of one of the other outputs that may be HDMI, the DVI device will not get an image. If the EDID is learned from the DVI device then the HDMI outputs will not get audio although the DVI will now get video.
- Make certain the matrix can support HDCP on all outputs simultaneously. Some devices on the market can only support one HDCP output per input source.
- If you are using a Dolby receiver on one of the outputs it may not work if the other destinations do not support surround sound. You may have to deal with the audio on a separate matrix and use the S/PDIF or optical of the source devices to get the 5.1 or better so that the HDMI output can be at 2 channel to keep compatibility with the display devices.
- Always try to pick out display devices which can all handle the highest resolution and frame rate desired. Even if a display does not have a native resolution of the best display device being fed, it is important it has the ability to downscale the higher resolutions. Failure to do so will result in having to learn the EDID of a common denominator of the output devices so the 1080p 60 frame device would have to settle for 720p if this is not done. This applies to colour depth as well.
- Make certain the HDMI matrix, switcher, or DA can learn the EDID of any of the output devices otherwise you may be limited to the EDID built into the device.
- Always read the specifications of the source and destination HDMI device for its actual capabilities. Just because it states 1.3c compliant does not require the device to support every capability of 1.3c. For example, an HDMI 1.3c DVD that can output 1080p 60 frames with 36 bit colour depth, however the HDMI 1.3c LCD may only do 1080p 24 frames with 24 bit colour

depth. Usually the source in this case can reduce its output to the lower frame rate and colour depth but you will not achieve the desired intent of the DVD capabilities due to the limitation of the LCD.

2. Some Aurora HDMI Converter & Extender Applications/Solutions *by Aurora Multimedia Inc.*

Legacy analogue (VGA /YPbPr/ Audio) on digital HDMI matrix or switchers managing analogue and digital audio / video with multiple matrixes adds cost, complexity and uses valuable rack space.

Instead, a single HDMI matrix can be used in combination with the Aurora converters. The VGA and YPbPr sources can be fed into the ASP-VTH which converts the analog source with audio to an HDMI source to be fed into the matrix (ASP-88 per the diagram).

To deal with the audio into the amplifier (AS-AMP1 per the diagram) an ASP-HTD can be used on one of the outputs to break out the HDMI audio into an analogue L/R or digital S/PDIF. In the event an output device has only a VGA input and provided the HDMI is not encrypted the ASP-HTV can be used on the HDMI matrix output. Through the use of these simple converters, the systems core can be digital and wiring can become less complex especially to the display device which will now only require an HDMI connection.

DVI Displays on an HDMI System

A common issue on an HDMI matrix or switcher is the use of a DVI display on one or more of the outputs. If the EDID of the HDMI display is used, then the DVI will not show an image. If the EDID of the DVI is used, then the HDMI displays will have no audio. To solve, use an ASP-HTD (HDMI to DVI converter) on any output with a DVI destination. This way the HDMI EDID can be learned and when the matrix routes to the DVI output(s) the HDMI source will be converted by the ASP-HTD back into DVI with the separate audio (thus solving the issue).

DVI with analogue Audio into an HDMI matrix

The ASP-DTH combines the DVI video with the audio channel into the single HDMI feed, allowing integration into the HDMI matrix / switching solution.

Extension Solutions

When going long distances with HDMI, there are a variety of ways to extend the HDMI. For shorter distances the ASP-CATx1 or ASP-CATx2 can be used. Keep in mind CAT 5/6 solutions distance is limited by the bandwidth: the higher the resolution and colour depth, the lower the distance. For example, if 480p is the max resolution the cable can be over 200ft, however, if 1080p is used with 36bit then about 65ft – 80ft can be used.

For best distance when using HDMI CAT solutions choose CAT 6 solid core no shield for best results. For longer distances, fibre is the perfect solution. The ASP-FIBRS1 can go over 300m (about 1000ft) with a single multi-mode fibre. Bandwidth will not affect the fibre solution and it can also transmit/receive RS-232 control data.

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