HDMI Distribution Best Practices

This list of Best Practices is recommended for all HDMI Distribution products including 1Cat and HDBaseT extenders. Following these recommendations will provide the best performance for the system, while helping to ensure that no issues will arise during or after installation.

Important Note! Some guidelines relate specifically to HDBaseT technology, while tighter guidelines relate to other types of extenders as indicated below. .If the wiring in place at the job site does not follow the tighter non HDBaseT Guidelines; consider upgrading to HDBaseT for the best performance.

Wiring & Termination

General Wiring Recommendations

- Shielded CAT5e/CAT6 and shielded RJ45 connectors are strongly recommended. Unshielded or improperly terminated cables may be susceptible to video dropout problems from ceiling fans, and other EMI issues.

  Note: *For proper shielding, shielded connectors must be used with drains connected at both ends. In addition, "EZ end" connectors are not recommended for use with HDMI extenders.*

- Terminate RJ45 connections using the EIA 568B standard. Most major video transmission manufacturers recommend 568B for HDMI primarily because it tends to lessen video sync issues at longer lengths.
- Do not use RJ45 "E-Z" connectors. The bare copper at the end of the connector can introduce unwanted noise and unreliability in some cases.
- Leave extra cable at each end of cat5e/6 runs (don't exceed maximum length) to ensure that if the cable is damaged or needs to be longer, more terminations won't have to be added to the run.

1Cat Wiring Recommendations

- There should be no intermediate connections like keystone inserts, punch down blocks or splices in the Cat 5e/6 cable from end-to-end. Breaks in the run will limit signal reliability and transmission distance.
- Do not use pre-made patch cables. Many of these are made of stranded wire, not solid core. This dramatically reduces the bandwidth of the signal.
- Do not use Cat5e/6 wire lengths shorter than 20 feet. Yes, there is a minimum. For lengths shorter than 20 feet we recommend HDMI cables (that are licensed and certified) straight to the display.
- Be sure to use 1 meter or shorter HDMI interconnect cables between any device and the input or output HDMI port of a non HDBaseT extender. Extenders may work with longer cables, but in the case of any picture or sync issues, these must be 1 meter or less to accurately troubleshoot the extender.

HDBaseT Wiring Recommendations

- HDBaseT is more forgiving than older 1 cat extenders on runs with breaks in the line. It can be used on cables that have, at most, two keystones or couplers in the run. Couplers have outperformed punch down keystones testing so they are preferred.
- If shielded cable is being used, shielded patch cables and keystones/couplers must also be used for the shielding to be fully effective.
- Patch cables may be used in HDBaseT installations as long as they are 5 meters or less in length and may be stranded or solid type. Limit any run to two patch cables (max 5 meters each).
- There is no compromise in resolution versus distance for HDBaseT. The limit of each model (B-500-EXT-230-RS=230 feet; B-500-EXT-330-RS-IP=330 feet) must be considered no matter the video, or audio format.
- Be sure to use 2 meter or shorter HDMI interconnect cables between any device and the input or output HDMI port of an HDbaseT extender. They may work with longer cables, but in the case of any picture or sync issues, these must be 2 meters or less at **both** ends to accurately troubleshoot the extender.

Design Considerations

- Limit the number of "layers" of HDMI devices in the system. For example, do not attempt to use two 4x4 matrix products rather than one 8x8 matrix. Additional splitters, matrices and extenders between the source devices and the display increase the chance for problems.
- Use line drawings of the application for every job, and leverage our tech support team – email us and we'll help you engineer the system. pdts@snapav.com
- Be aware of bandwidth and feature limitations of HDMI cables. Check the Binary™ HDMI Features Guide.
- Whenever possible, use an HDMI input other than input 1 on the display. Many use this input as a combo HDMI/DVI port. This can cause handshake issues when using extenders.
- Turn Deep Color to "Off". Higher settings for 10- or 12 bits per channel provide no visual benefit with current technology and transmission becomes less reliable

Configuring for Resolution

- Try to use embedded EDIDs before EDID learning to avoid issues with Deep Color. If possible, turn off Deep Color at the source component(s).
- On 1Cat Extenders, set the "distance" adjustment on the receiver to the position that gives the best picture quality for each extender. Position 7 for short distances, position 0 for long distances. Refer to the manual for more information.
- Whenever possible, force the source to a single output resolution- 1080p, 720p, etc. Also set the Deep Color to 8bit per color (24 bit total). Allowing it to auto-detect higher resolutions can cause issues if the system design can't support it.

Recommended Test Tools

- RJ-45 Test Meter: Include Pair/Continuity/Tone preferably with cable length testing capability.
- HDMI Tester: Binary™ HDMI Digital Cable Continuity Tester with LED Readout .
- For testing purposes, have a pre made and tested shielded Cat5e 130' cable (for 1CAT), 200' cable (for B-500-EXT-230-RS) and 300' cable (for B-500-EXT-330-RS-IP)

• If You Get Stuck – Call Us!

To better help us help you, double check the basics: wiring & termination, design, and test results. Here's a quick check-list:

Source Device(s)?
(brand, model) ______________________

What is the resolution setting? ______________________

What is the Deep Color setting? ______________________

Display Device(s)?
(brand, model) ______________________

Is there an AV receiver in-line?
(brand, model) ______________________

What HDMI interconnect cables are being used?
(brand, model, length) ______________________

What type of Cat 5e/6 cabling is being used? ______________________

Length of this cable?
(see foot markers at both ends) ______________________

Remember, When Troubleshooting:

- Review the notes above confirming all Best Practices have been followed
- Reduce the system to the most basic setup removing all variables
- Be methodical; only change one item at a time
- Connect one item and test before moving on

Contact SnapAV Technical Support

Phone: 866-838-5052

Hours: M - Th 8am – 8pm EST & Fridays 8am – 7pm

