**Installer
Expert
Program**

The HDBaseT Installer's Ten Cable Commandments

1 LAN is thy CABLE

HDBaseT runs on a regular LAN cable (Cat5e or above), so any best practices regarding Ethernet installations also apply here. Cable performance is defined by the quality of the cable, the distance of the connection, the handling of the cable, and the video resolution expected. A rule of thumb is that the higher resolution, the better the cable should be. The same goes for distance.

The cabling infrastructure in any project is likely to be around for a long time – it should last longer than any other component in the network, and choice of cable should take into consideration new applications, additional users and potential expansions of the whole system.

2 Thou shalt not untwist your wires unnecessarily

There is a reason that the wires are twisted: it cancels out electromagnetic interference (EMI) from external sources and crosstalk from neighboring conductors. When terminating the cable, make sure not to untwist more than half-an-inch (and preferably a quarter-of-an-inch) from the point of termination, and remove as little of the sheath as possible.

3 Thou shalt handle your cable with care

LAN cables are fairly resilient. Yet, any rough handling, such as tight tie wraps, clamping or stapling can damage the cable, compromising performance or even preventing signal transmission. Tie cables loosely with appropriate cable wraps, and make sure to use appropriate cable support systems when too many cables are involved, such as trays, carriers or J-hooks. If pulling cables is necessary, make sure not to pull too hard because that also may cause pairs to untwist and degrade performance. Cable physical protection safeguards the integrity of data transmission.

4 Thou shalt not overbend your cables

Another important issue for cable integrity is the bend radius. Bend radius is the inside curve of the cable during and after installation. It is best to keep the minimum bend radius at least at four times the diameter of the cable – that means that the cable should not be bent below that radius, so as not to damage it and compromise signal transmission. Overbending may loosen or otherwise modify the wire twisting and increase susceptibility to external noise and near-end crosstalk within the cable.

5 Thou shalt keep your cables away from power sources

Cables should be kept at a distance of at least 12 inches from power cables. In an environment prone to high EMI, it is best to use shielded cables. Most Cat5e cables are unshielded, which makes them more flexible, durable and inexpensive. But they are also more susceptible to EMI.

If using unshielded cables, keep them away from any source of EMI such as other cables, transformers and light fixtures. In high RF environments, it is best to use shielded cables.

The same applies to shielded connectors. In a shielded connector, the signal pins are surrounded by a metal shield, and further reduce electromagnetic interference. Shielded connectors provide a better fit and therefore better performance.

6 Thou shalt mind your distances carefully

HDBaseT delivers the 5Play feature set over 100m/328 ft. One of the factors that affects distance is the quality of the cable used, the working environment, and the video resolution expected. Higher quality cable will keep the signal better than low quality cable over distances. A noise-free environment will deliver better performance over the distance than a noisy or EMI-prone environment. Some HDBaseT equipment allows for Long Reach connectivity – 150m/492ft – for lower resolutions of 720p.

7 Thou shalt not use patch cords unnecessarily

If possible, avoid patch cords or cables altogether, as every connection introduces losses in the transmission. If absolutely necessary, make sure to use less than two per cable run and keep each less than five meters from the end.

8 Thou shalt terminate carefully

One of the advantages of HDBaseT's using of LAN cables is that they are easily field terminated. That means there is no need to pre-measure cables and bring all the set-up ready ahead of time, saving time & money. Make sure to use proper equipment for termination, such as cable strippers, electrician scissors, and crimpers. Also, make sure that both ends of the cable are wired according to the same scheme, either T568A or T568B. Never use both in the same installation. It is also recommended to check with HDBaseT manufacturers which scheme their products are optimized and equalized for, to take full advantage of the expected performance.

9 Thou shalt be thorough and test, test, test

Testing is crucial to guarantee both cable quality and signal integrity. Pre-testing can save hours and resources from troubleshooting any issue ahead of time. During and after installation, a professional test equipment will check connections and transmission of the installed infrastructure, beyond broken or mismatched wires, but also any hidden issues that may cause interference or loss of signal. Make sure to test every cable as it is installed and terminated, to identify individual problems as the installation goes.

10 Thou shalt be organized

Document and label all cabling components to facilitate any upgrades or expansions later, including diagrams. Remove any abandoned cables to prevent accidents or fire hazards. Avoid routing cables through pipes and holes, which may limit additional future cable runs.