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HDMI Cables – For the Long Run
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Not too long ago the High-Definition Multimedia Interface (HDMI) came out of the shadows and began appearing in audio/video products. First HDMI appeared on a limited number of high-end devices. Then HDMI, like most new technologies, began to trickle down into mainstream consumer products. Today HDMI is found on nearly every audio and video home theater component.

The idea behind HDMI is eloquent and simple. Use one compact cable to transmit both uncompressed digital audio and video. When HDMI first surfaced, at Accell we discussed the impact of this new technology. As a true cable manufacturer, Accell was in the perfect position to embrace HDMI. Our parent company, BizLink International, is one of the largest cable manufacturers in the world and able to create high-quality products quickly and efficiently. Like in most business meetings eventually the discussion turned its attention to the bottom line. Instead of requiring two cables, one cable for audio and one cable for video, now the same application would only require one cable. This realization summarized into a fear that HDMI would essentially cut the cable business in half. Like with many technological advances however changes are made and businesses quickly adapt. Often the outcome is positive, bringing growth and opportunity. This is the case with HDMI.

Today, the demand for high-definition (HD) picture and sound has spawned an expansion in the industry unseen since the invention of the color TV. Consumers are scrambling to get the devices and accessories needed to integrate an HD audio/video system into their home. An enabling technology in this growth is the HDMI interface. The HDMI interface is playing an integral role in the integration of home theater components, and the HDMI cable has become the backbone of HD audio and video signal transmission.

**Accell UltraAV HDMI Cable**

Although few give thought to the complexity behind making a quality HDMI cable, it's not as simple to make as the analog coaxial cable that once ruled supreme. HDMI cables are very sensitive to variations in construction and must be manufactured to extremely tight tolerances. Critical in the manufacturing process is the human factor. Each connector has 19 tiny pins and each pin must be accurately soldered to a tiny wire. This process is done by hand and requires highly skilled technicians. Materials in the cable such as shielding, wire quality and

winding, dielectrics and jacket quality all play a role in the performance of the cable and the footprint, or lack of, which the cable leaves on the signal. Accell's goal is to design and construct cables that leave no footprint on the signal and are a neutral presence in the audio/video system.

On occasion we hear the comment that all HDMI cables are all the same. Digital signal transmission is just a series of 1's and 0's and in the digital realm all digital signals are equal. The principle is correct, however the truth is that the sound and picture quality can vary from one HDMI cable to another. Some HDMI cables may work intermittently or produce snow or multi-colored dots dispersed throughout the picture. Static or crackling in the audio is another symptom of a poorly built HDMI cable. Other cables will work fine at 1080i resolution, but at 1080p the picture quality deteriorates or drops out altogether. HDMI cables have other challenges. HDMI cables are known for having a limitation in length of about 16'. HDMI cables longer than about 16' in length often just don't work. The cables impedance (resistance to sending a signal) causes the signal to drop off at longer lengths. A 16' HDMI cable limitation is a serious problem since many audio/video applications require longer cabling. Accell has come up with a solution by lowering the cables impedance to passing the signal and in effect allowing for a longer cable run. A typical HDMI cable is constructed using 28 gauge copper conductors. By increasing the thickness (gauge) of the copper conductors to 26 gauge and 24 gauge, we can extend the HDMI cables length up to 65'. For these cables, Accell uses only UL Listed, CL3 (Class 3) rated cable. The UL number is printed directly on the cables jacket for easy reference. A rating of CL3 permits the cable to run in-wall in many installations.

Some applications require an HDMI cable length far beyond 65'. Projectors or wall mounted flat screen TV's often require long length HDMI cables that can run inside the wall. For these applications Accell developed the UltraRun line of long length HDMI cables. UltraRun cables are engineered using a miniature signal repeater integrated into the end of the cable. By connecting the amplified end of the cable to the display, the repeater boosts the audio and video signals, providing cable runs in lengths of up to 147' without signal degradation. The cables support all resolutions including 1080p and are UL Listed and CL3 rated. The UltraRun cable has been tested and is certified by an HDMI Authorized Testing Center (ATC).

**Accell UltraRun HDMI Cable**

The HDMI specification has been steadily evolving since the introduction of the HDMI version 1.0 in 2002. Each revision introduces new functionality that increases data transfer demands ultimately requiring improved performance from the HDMI cable. The latest HDMI specification version 1.3a is no exception. HDMI 1.3a consists of two distinct cable categories, Category 1 and Category 2. Category 1 is referred to as "standard speed" and supports HD television as well as much of the same functionality of the previous HDMI version 1.2a. Category 2 is referred to as "high-speed" and is a giant leap in functionality than that of the previous HDMI version. Category 2 provides support for features such as a single-link bandwidth to 10.2Gbps (340Mhz) and support for up to 48-bit Deep Color. This is up from 4.95Gbps (165Mhz) and 24-bit color in previous versions. Other features like audio/video synchronization and support for resolutions up to 1440p are also included in the new HDMI specification. Designed to be practically future-proof, HDMI 1.3a Category 2 supports high-definition audio and video demands today and well in the future. Although HDMI 1.3a is fully backwards compatible with previous HDMI versions, early HDMI cables may not support the audio and video features of HDMI 1.3a. To support this new bandwidth intensive specification, Accell re-engineered its HDMI cable and created a new line of cables called ProUltra. ProUltra cables are HDMI 1.3a Category 2 compliant and supports 1080p HD resolution; Deep Color

**Accell ProUltra HDMI 1.3 Category 2 Cable**

technology and Dolby TrueHD and DTS-HD surround sound. Starting at $49.99 MSRP for the 1m (3.3ft.), with lengths up to 5m (16.4ft.), the ProUltra cables provide outstanding price-performance.

For many home theater owners, upgrading an HDMI cable is an effortless process. Often it's as simple as reaching behind the entertainment center and replacing the existing HDMI cable. Upgrading a cable that has been run in-wall however can be a time consuming and costly process. If running an HDMI cable in-wall, consider using a cable that can support future system upgrades.  Accell is putting the finishing touches on its UltraRun 1.3 HDMI 1.3a Category 2 long length cable. Accell's UltraRun 1.3 HDMI cable ensures that the cable installed in your wall today will support future upgrades to your home theater system. UltraRun 1.3 HDMI cables will be released in early 2008 and are designed using a miniature signal repeater integrated into the cable. They'll be available in lengths of up to 25m (82ft.) with longer lengths to follow. Like the original UltraRun cable, the UltraRun 1.3 cables are UL Listed and CL3 rated for in-wall installation.

**Accell UltraRun 1.3 Cable**

*Michael Weizer is Director of Marketing for Accell Corporation. Accell, a wholly owned subsidiary of BizLink Technology, is a member of the HDMI trade organization. Accell is focused on the design, manufacture and delivery of affordable, high quality audio/video cables and signal distribution products. For more information, please visit our Web site at www.accellcables.com.*