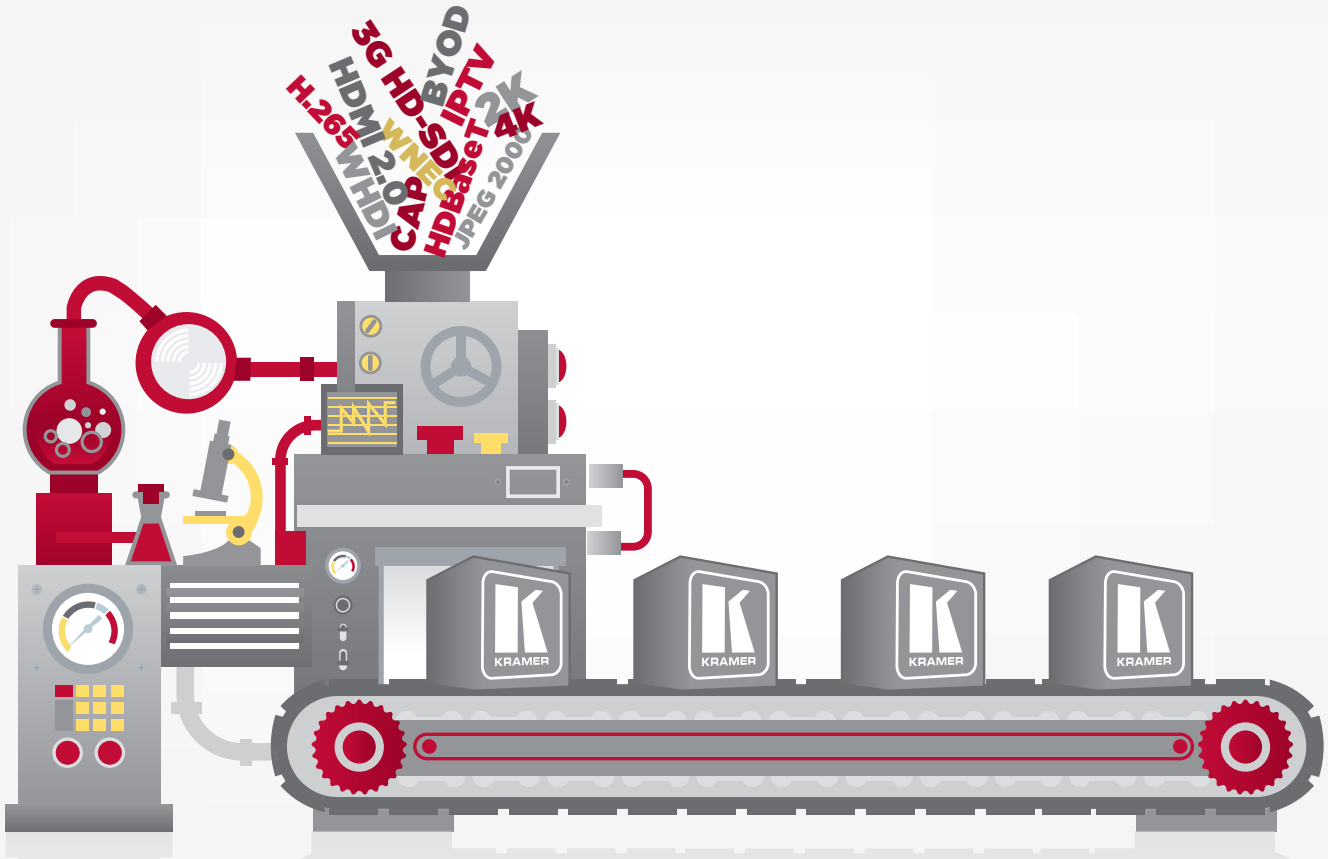
KRAMER

CONNECTIONS™

JUNE . 2014



WE'VE GOT YOUR BACK

INSIDE THIS ISSUE:

First Aid HDMI
Pack Em' Up! New Video Codecs
BYOD, Wireless, Collaboration

INSIDE THIS ISSUE:

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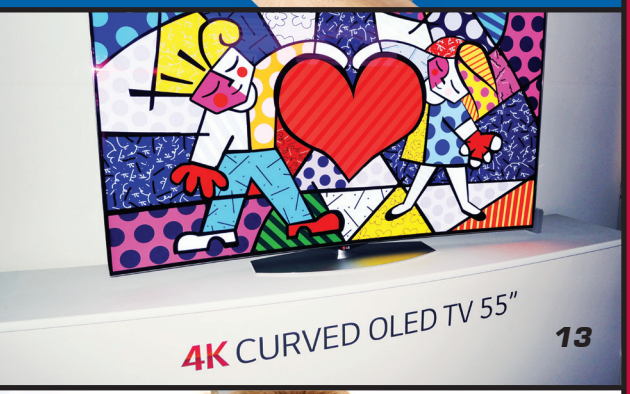
issue 11

4

12



13

18

25

Table of contents

INTRODUCTION 3

KRAMER PRESENTATION SWITCHER/SCALERS GET SMARTER 4

PACK 'EM UP! NEW VIDEO CODECS 6

DJ'S DUGOUT GOES DIGITAL 7

CHURCH GETS HIGH-TECH MAKE-OVER FROM KRAMER ELECTRONICS A/V SYSTEM 8

KRAMER PRODUCT SHOWCASE 10

UHDTV (4K) UPDATE: THE TRAIN IS HERE – ALL ABOARD! 12

FIRST AID HDMI 16

NEXT GENERATION DISPLAY INTERFACES: A NEED FOR SPEED 18

KRAMER OPENS GATEWAY TO HDMI SYSTEM 20

BYOD, WIRELESS, AND COLLABORATION = A NEW WAY TO MEET 21

KRAMER ACADEMY: AQAV – NEW STANDARDS FOR AV QUALITY 22

KRAMER INSTALLER SOLUTIONS 24

WIRELESS AV UPDATE: KRAMER KW-11 26

CONTROL SYSTEMS UPDATE: K-TOUCH 27

JUST FOR FUN FACTS 28

KRAMER PROFILES 30

KRAMER TESTIMONIALS 31

We've Got Your Back

Lately it feels like change is coming way too quickly to the world of AV. We've just gotten used to HDTV, and now all we hear about is 4K. Our facilities were originally designed around personal computers, and now everyone wants to use tablets. We've installed wall plates and pop-ups in meeting rooms, but now the focus seems to have shifted to wireless connectivity.

It may seem impossible to keep up with all these changes. Sure, you've heard about the analog sunset and know that your old video and computer interfaces will be obsolete in a few years. And maybe you're already upgrading your facilities to accommodate HDMI and DisplayPort connections. Perhaps you're even planning an IPTV backbone for streaming cloud content.

Even so, there are surely days when you lean back in your chair, let out a sigh, and wonder how you can possibly stay current – how you can even anticipate the latest electronic presentation platform to walk off the show floor at International CES and into your classrooms and meeting spaces, and how to interface it to your system.

It's not easy, but Kramer can help. We work very hard to stay ahead of the latest trends and respond with products that will take care of your needs today and provide some future-proofing for tomorrow.

Example: Our ProScale VP-773 and VP-774 presentation switcher/scalers provide value with extra digital inputs and outputs, including direct HDBaseT™ connections. But we've also added an automatic campus alerting system to both products that is based on the Common Alerting Protocol (CAP) – a good example of AV and security features intersecting in a sensible, affordable way.

Another example: Our KW-11 wireless HDMI kit allows full-bandwidth connections of everything from notebooks, tablets, Blu-ray players, and cameras to monitors, projectors, and other interfaces – handy where permanent wiring would be impractical. But the KW-11 is also certified to meet IEC specifications for use in operating rooms as part of a medical imaging system.

One more example: Small, "ad hoc" meetings are all the rage nowadays. But how do you present, share, annotate, and edit from a myriad of computers, tablets, and smartphones, and do it all wirelessly? Our revolutionary collaborative presentation system is the answer. It provides a fast, simple, and intuitive interface for Windows, Mac, and Android users – just log in, and start presenting.

If you've been inundated with press releases and marketing hype about hot new technologies like HDBaseT and 4K and can't make sense of it all, we've got simple, straightforward answers. Contrary to what you may hear, no one manufacturer has all the right answers, nor do they have an exclusive on expertise. Kramer's been around for over 30 years, so we've learned a thing or two along the way!

To help you make more sense of it all, we're continuing our commitment to education, rolling out new InfoComm classes in 2014 that will cover UHDTV and Bring Your Own Devices (BYODs), along with updates to our popular Wireless AV and Digital Video / IPTV courses.

And of course, our popular all-day Kramer Certified Digitalist Training will continue to be offered in 2014. The way we see it; the more you understand digital AV technologies, the more confidence you'll have with your design, purchase, and installation decisions.

Which brings us to one of our most exciting new developments. We have become the first educational partner with the Association for Quality in AV Technology (AQAV). We will now be offering Certified QA Technician (CQT) and Certified QA Designer (CQD) classes all across the USA this year. Paying attention to quality in system design and system installation is proven to result in greater profits and more satisfied customers.

So sit back, relax, and enjoy this latest edition of Connections. Inside, you'll find useful technology articles, Kramer product guides and showcases; read about real-world applications of digital AV interfacing, and get the latest information on 4K, the new updates to HDMI and DisplayPort, and what's happening in the world of wireless. Plus some "just for fun" stuff, too.

And don't worry. We've got your back.

Dr. Kramer himself has our customers' backs

VP-771
2013
Systems Product
of the Year

Kramer Presentation Switcher/Scalers Get Smarter

Presentation switchers – or more accurately, multi-input digital/analog scaler switchers – have become essential classroom equipment. Originally, these versatile boxes were designed to switch between a wide range of analog video and computer signal formats (with an equally wide range of display or video resolutions) and convert them all to a single analog signal format at the same resolution.

It wasn't long after these products appeared that support for digital signal interfaces was added, such as DVI, HDMI, SDI, and even DisplayPort. But these formats brought along their own challenges – copy protection and video card setup information.

TIMES CHANGE

Today, the use of analog signal interfaces like component video and VGA is on the wane, and manufacturer support for these analog formats is fast fading. In their place, we have wider use of HDMI and DisplayPort interfaces on computers, "mini" versions of both formats on smartphones and tablets, and the elimination of analog video outputs on Blu-ray and DVD players and set-top boxes in favor of HDMI connections.

While this new wave of connectors and standards seems intimidating, it doesn't have to be. Kramer's next-generation presentation switcher/scalers have grown up and gotten a lot smarter. These products don't just convert different input resolutions to a common resolution – they can also tell connected video cards to output a specific pixel resolution and image refresh rate.

Their digital inputs can switch signals faster and their output interfaces now include twisted-pair connections with embedded control signals. These products can be operated with simple, web-based graphical user interfaces, and they are now a key part of campus emergency alert systems. Following are some of the new features you'll find under the hood in our new VP-77 Series of scaler/switchers which consists of the VP-770, VP-771, VP-773, VP-774, VP-773AMP and VP-774AMP models.

More digital inputs and faster switching:
The Bring Your Own Device (BYOD) revolution means more students than ever are coming to class equipped with tablets, smartphones, and even "phablets" – super-sized smartphones that can also function as tablets. And every one of these BYODs has a digital video/audio interface.

Add in all the HDMI connectors found on laptops, and you'll run out of digital inputs pretty quickly unless you upgrade to a new presentation switcher. Support for four separate HDMI inputs along with DisplayPort is standard on Kramer VP-773/774 presentation switcher/scalers. Need SDI inputs and outputs? They're available. Need more output connections? Some models offer two and even three simultaneous digital outputs.

The most common gripe about digital input signal sources – both video and computer – is that they take too long to switch; much longer than analog signals. Good news! Kramer VP-77 Series presentation switcher/scalers read and confirm EDID settings and exchange and verify copy-protection keys (when present) much faster than

VP-770, VP-771, VP-773, VP-774

older digital interfaces do. As a result, your images show up on screen quickly after a "take" command is executed.

Intelligent EDID management:
Every signal source – from media players, set-top boxes, and DVD/Blu-ray players to tablets, smartphones, and notebook/desktop computers – reads and responds to extended display identification data (EDID) through its digital display interface. EDID ensures the signal source sets the correct image resolution and refresh rate for optimal picture quality.

On older models of presentation switchers, EDID is programmed at the factory for two or three common computer resolutions, such as 1920x1200 or 1920x1080. The output resolution is then toggled to another factory-preset value to match the connected display(s). Or, a custom resolution is defined, saved to memory, and selected.

While that's a good system, there's lots of room for improvement. Today's computers can generate any output resolution and timing when reading EDID, up to the operational limits of their graphics cards. Accordingly, Kramer VP-77 Series presentation switcher/scalers include intelligent EDID management on all inputs, allowing you to define custom EDID settings. And that will ensure all connected video and computer sources deliver signals that are compatible with every display in your AV system.

Intelligent EDID also solves pesky bandwidth problems you may encounter with older structured wire signal interfaces. Deep Color signals boost pixel clock rates to a speed that can exceed the bandwidth specification of existing extenders and switchers. The solution; intelligent EDID management lets you define the optimum resolution, color space, and clock rate for your AV system, no matter what video or computer sources are connected.

Signal multiplexing:
Also known as "port tunneling," this process embeds RS232C control signals into a digital signal so they travel alongside video and audio. The preferred digital output connection for port tunneling is the HDBaseT™ format, which is fast becoming the industry standard for transporting HDMI over structured wire.

The benefit of packing multiple AV signals into one transport format is substantial – one wire is all that's needed to connect displays to your presentation switcher, saving you time and money in your installation. At the display end, HDBaseT receivers neatly extract video and audio signals and RS232 commands so they can be sent where you need them to go.

Intuitive Web based control interfaces:
Believe it or not, the RS232 control standard has been around for more than 50 years. While many AV facilities still use RS232, there's a better way: Today's presentation switchers are equipped with a Web page interface that enables simplified setup and switching and gives you full control over all scaling and switching functions.

Operations you can control quickly and easily from the Kramer Web interface include EDID management, picture positioning and sizing, input and output resolution and color space selection, color bit depth and noise reduction settings, HDCP on/off operation, HDCP follow mode, port tunneling, and audio and image settings.

Emergency alert capability:
This isn't a feature that people would normally associate with a presentation switcher, but the need for fast, efficient distribution of national and local emergency alerts and updates across campuses has never been more important. The VP-77 Series presentation switcher/scalers support the Common Alert Protocol (CAP) and can receive and display emergency alerts using nothing more than a standard Ethernet connection.

Pack 'Em Up!

New Video Codecs

With 2K displays and televisions everywhere these days and 4K lurking around the corner, it's time to re-visit the topic of video codecs.

"What's a codec?" you ask. Actually, the term "codec" is shorthand for coder-decoder, and you'll find them in any device that can play back digital video. Blu-ray players? Check. Roku and Apple TV boxes? Check. "Smart" TVs? Check. Tablets and smartphones? Check.

Digital video wouldn't be possible without codecs. These clever boxes use combinations of hardware and software to analyze streams of video, using redundancy to pack down the file sizes of each stream so they can fit on a disk or hard drive or travel over internet connections to your home.

The most commonly used video codecs were developed by the Motion Pictures Experts Group (MPEG). The first version of MPEG (MPEG-1) dates back to the early 1990s and was limited to low-resolution standard-definition video. MPEG-1 has been gone for a long time now, but we still use its digital audio layer – MPEG-1 Audio Layer 3; better known as MP3.

Its successor MPEG-2, which appeared in the late 1990s, was developed for DVDs and also used for HDTV broadcasts. With MPEG -2, an HDTV broadcast using the 1920x1080i format could be compressed at an impressive ratio of 55:1 and stream at about 15 – 20 megabits per second (MB/s). When decoded, it looked pretty good on the new generation of flat screen plasma and LCD TVs.

But the compression elves weren't done. The next iteration, MPEG-4, made its appearance in 1998 and promised a 50% reduction in file size and bit rate over MPEG-2. Those promises were realized almost a decade later with the implementation of the MPEG-4 H.264 codec, known as Advanced Video Coding (AVC).

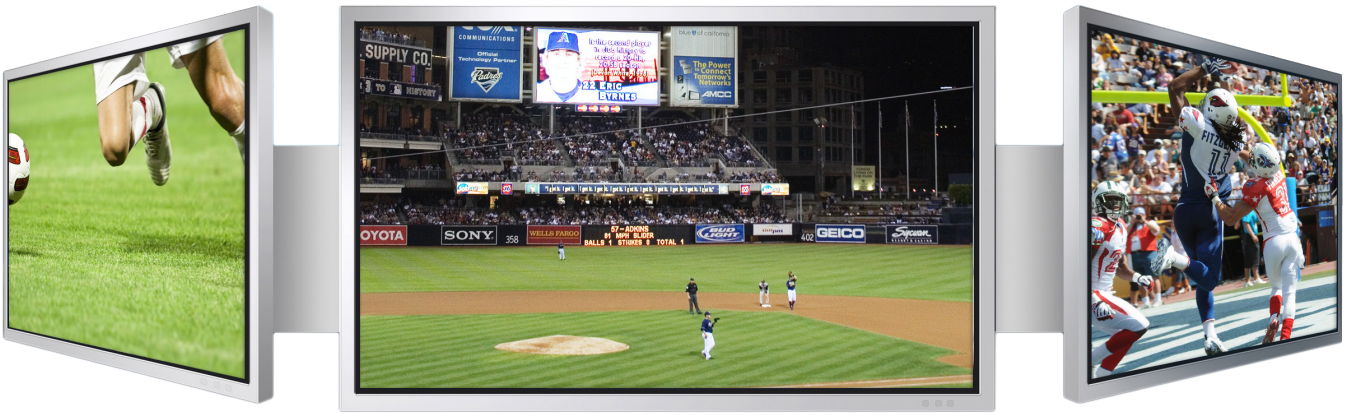
It didn't take long for AVC to become the preferred codec for internet video streaming, not to mention the Blu-ray disc format. Now, it was possible to stream 1080p HD movies and video at 6-8 Mb/s, with standard definition video requiring half that rate.

Now, we're ready for a newer, more efficient codec – H.265, or High Efficiency Video Coding (HEVC). It couldn't come at a better time, with the launch of UHDTV in full swing. HEVC adapts and expands the coding structure of H.264 to compress video streams by another 50%, allowing 4K video (with four times the resolution of 2K) to pass at 15 – 20 Mb/s. And 2K (1080p) video streams can now travel at just 2 – 4 Mb/s with good image quality.

The first chips for HEVC coding are now being shipped to manufacturers of televisions, media players, and gaming consoles. At NAB 2014, numerous demonstrations of HEVC coding took place, including live encoding of 4K video. While there isn't a 4K version of Blu-ray yet, H.265 HEVC will be an integral part when the format finally arrives.

Google has also gotten into the act with its open platform, royalty-free VP9 codec. In early tests, VP9 has shown promise for more efficient coding of SD and HD YouTube video content over low-bandwidth internet connections. Several TV manufacturers showed support for VP9 at the 2014 International CES; among them LG, Sony, Samsung, Sharp, and Toshiba.

It's not far-fetched to think we'll see these codecs used in smart phones and tablets. New smartphones from Sony, Samsung, and LG can already record video in the Quad HD (3840x2160) format. Stay tuned!



DJ's Dugout
Goes Digital

Sports, Sight and Sound Combine For Entertainment Experience

Guests at DJ's Dugout Sports Bar and Blazin' Pianos in Omaha, Nebraska, get more than just food and sporting events, with an experience that starts before they even walk in the door. High definition images on screens that are clearly visible through the complex's giant windows grab the attention of passersby. Inside, guests are surrounded by digital sights and sound meant to be bigger and better than any they've ever experienced.

"We wanted it to look and feel like you're going someplace really special to watch a game," said Dennis Pitzl, President / CEO of local audio/video installation company CONCEPTS AV Integration, who designed the system.

The installation is the first of DJ's Dugout's four locations to have a completely digital audio/video system. According to Pitzl, the CONCEPTS AV design team proposed the Quad-view projection system and 65-inch plasma displays to draw in the crowds, and then they used 44 displays and a 220-inch Quad-view dual projection system to allow for the display of four simultaneous broadcasts. The entire video system makes it possible for DJ's to show up to 36 different sporting events at one time. The audio system is designed to be heard over the noise of a crowded, high-ceilinged bar, but it does not challenge conversations when the bar is less crowded.

DJ's Dugout required an easy-to-use control system that could be accessed from multiple locations, including behind the bar. The system required 50 outputs from a switcher to route all of the sources to the plasma displays and projectors throughout the complex. "There was never a digital switcher big enough to accommodate these needs – until the Kramer VS-3232DN modular switcher," Pitzl said. By populating two Kramer VS-3232DN CORE™ switchers with a combination of HDMI and DGKat™ input and output cards in four input/output increments, CONCEPTS AV Integration created a switching system that resulted in a high-quality digital image on every video screen. An output card to the touch panel makes it easy to control the system.

The switchers feed video to three projectors with 116-inch screens, a 22-ft. wide dual projection split-screen system, and 29 65-inch plasma monitors around the room. In addition, signals are routed to 9 monitors on the "Dueling Piano" side of the complex. "There had to be a monitor everywhere people looked, so that anyone could see a screen without turning their head," Pitzl said.

The system also incorporates 25 Kramer VM-2Hxl HDMI distribution amplifiers to distribute signals to two outputs each, 48 Kramer PT-572+ DGKat digital receivers, a Kramer SID-X1 multi-format video over twisted pair transmitter and three Kramer FC-46xl audio de-embedders. Signals are carried throughout the complex by more than 40 Kramer HDMI and DA cables. Two PCs capture live events broadcast over the internet from ESPN3 and the Big 10 Network. The switchers, amplifiers and receivers are housed a case with glass doors against one wall in the main room, which enables serviceability and creates a "wow" factor. "The install had to be very clean, because it's all on display as you walk in the front door," Pitzl said.

The 6,800 square-foot complex offers sports fans a larger-than-life experience in sports, as well as a variety of food and drinks. An "air wall" divides the sports bar from the "Blazing Pianos" room, where dueling pianos entertain throughout the weekends. DJ's Dugout currently has four locations in the Omaha, Nebraska, area. Their first all-digital facility has kept fans coming back for the one-of-a-kind multi-media sports experience.

Church Gets High-Tech

New York City's Calvary Baptist Church went from traditional to high-tech with a complete audio/video system designed to bring worship services closer to everyone in the congregation. Thanks to digital cameras and big-screen displays, as well as a variety of switching equipment, everything from the preacher to the choir can be seen and heard from different angles throughout the church. The building itself can also be used for other events and presentations.

Created by PanAVid, a local audio/video installation professional, the system uses dramatic video walls to surround the congregation on three sides. "The church wanted a cutting-edge system that would add video to an elaborate sound system," said Dennis Mitchell, Client Relations Manager for PanAVid. "We designed something that could add a whole new dimension to their services."

Led by PanAVid's vice president of operations, Rob Loehr, with the help of a team of experts from Kramer Electronics, the system was designed for maximum efficiency and ease-of-use. Four 55-inch LED monitors in a 2 x 2 pattern form each video wall. The walls display video from three HD pan, tilt, zoom cameras placed around the church, a remote camera, computer-based graphics from a desk top and laptop, and a DVD player. PanAVid created break-out rooms in the choir loft, a green room, an overflow area and the front lobby that would also show selected content on high resolution monitors. In addition, monitors display content in the nursery, Sunday School and Fellowship offices and at the organists' area.

The video content is managed by a variety of Kramer Electronics switching and scaling products. "The Kramer switchers do a great job of managing all of the connectivity for this system," Mitchell said.

According to Michael Toombs, executive administrator at the church, "Calvary Baptist Church is delighted with both the equipment and the excellent service received in this renovation. The quality of our worship has been greatly enhanced."

The primary switching unit is the Kramer VP-747 ProScale™ In-CTRL™ dual scaler seamless switcher with the VP-747T remote control console. The unit's dual scalers allow video preview prior to sending the signal to the audience displays. Eight inputs accommodate various resolutions, and the scaler provides true seamless transitions between sources. The system also incorporates eight Kramer VM-2HxI 1:2 HDMI Distribution Amplifiers and a Kramer VS-88H matrix switcher, which routes the sources to selected displays or all of the displays simultaneously.

For long-distance signal transmission, four Kramer Electronics VM-114H4C combination switcher and distribution amplifiers allow selectable input signals of either HDMI or CAT5 over DGKat™ twisted pair cabling. Several PT-571 and PT-572+ DGKat twisted pair transmitters and receivers and a TP-50 twisted pair receiver and TP-121EDID twisted pair transmitter for computer graphics video signals are used throughout the system.

Two Kramer HDMI ProScale™ Digital Scalers – the VM-92 and the VP-434 – – scale the incoming signals to a computer graphics resolution and output an HDMI signal. PanAVid also used Kramer Electronics racks and rack adapters to house the switching and scaling products.

The system is run by volunteers from the church who quickly caught on to the technology. "The church has never had technology like this before, and Kramer helped us to make it seamless for them," Mitchell said.

KRAMER PRODUCT SHOWCASE

VP-773

8–Input HDMI & HDBaseT™ ProScale™ Presentation Switcher/Scaler with 2K Support

The VP-773 incorporates new technology advancements, including the ability to select and set an EDID for each input of the unit; ensuring connected displays will send the best signal possible to the VP-773, resulting in simplified connectivity and greater ease-of-use. The VP-773 also includes a unique Emergency Alert feature that will allow any video screen connected to a VP-773 to instantly display an alert message. Important campus wide (educational or corporate) safety messages can be delivered quickly and effectively thanks to a product that is already the heart of each room's AV System. The VP-773 also has superior scaling quality, ultra-fast glitch-free switching, 8 inputs comprised of 4 HDMI, 1 DisplayPort, 2 VGA and 1 CV and 3 simultaneously active outputs, 2 HDMI along with 1 HDBaseT.

VP-794

8–Input Universal Live Event Scaler/Switcher/Blend & Warp for Projection & LED Videowalls

The VP–794 is a high–performance switcher/scaler/scan converter for analog and digital video signals developed specifically for driving large screen displays and multiple screen applications from video or graphics sources. It up– or down–scales the incoming signal, processes the image with HQV and flexible warping, geometry correction and professional grade edge blending and outputs the signal to 3G HD–SDI, DVI/HDMI, VGA and S/PDIF connectors. VP–794 includes a special mode for driving LED video walls with pixel–accurate output image sizing.

VP-553

6x2 Presentation Switcher/Scaler for HDMI & HDBaseT w/USB Switcher

The VP-553 is a versatile and economical, yet powerful 6x2 presentation switcher/scaler for HDMI and HDBaseT signals with additional analog support for one of the two scaled outputs, along with a 4x1 USB switcher. The unit accepts six signals: three HDBaseT and three HDMI. It scales the video, embeds the audio and outputs the signal to one of the scaled HDMI outputs. Output 1 can optionally send the signal over HDBaseT and it also has analog support for two computer graphics signals, two composite video and two TP inputs. In addition to the embedded audio output, independent stereo audio outputs are also available.

TP-580TXR & TP-580RXR

HDMI, Bidirectional RS-232 & IR over Extended Range HDBaseT Twisted Pair Transmitter & Receiver

Kramer's TP-580TXR and TP-580RXR are an extended range, HDBaseT twisted pair transmitter and receiver for HDMI, bidirectional RS-232, and IR signals capable of providing a range of 590 feet (180 meters) in Ultra mode, when utilizing Kramer DGKat623 twisted pair cables (for signals up to and including 1080P@60Hz 24bpp).

VS-62D

6x2 DVI, DGKat & Audio Matrix Switcher

The new, multiple output, Kramer Digital Matrix Switcher, with its range extender modules, provides flexibility and versatility along with other additional unique features.

Kramer's Digital Matrix Switcher Solution allows an easy connection of any source, with any major video interface, to the display device installed in the boardroom, classroom or presentation suite.

The new Digital Matrix Switcher Solution is comprised of a matrix switcher with six digital video inputs, four analog audio inputs and two digital video outputs. An HDMI receiver as well as HDMI, VGA and analog audio active Wall Plate can connect to the switcher over twisted pair cable, enabling the connection of both digital and analog video sources to the system.

Kramer's Digital Matrix Switcher Solution includes a built-in test pattern generator that allows testing of all inputs and outputs over the entire signal path from source to display. This process eliminates the need to 'sacrifice' an input for testing, or, from having to purchase an expensive external test generator.

Kramer's next generation VS-62D Digital Matrix Switcher with its matching range extender modules provide a cost-effective, universal, reliable AV routing solution, suitable for today's challenging business environment.

Digital Step-In™ Modules

The Digital Step-in system is designed to bring flexibility and versatility to your boardroom or presentation suite. Kramer's Digital Step-in system allows you to easily connect to the display device from any source utilizing any major video interface.

The system is comprised of a switcher and up to eight optional Step-in modules, each one connected by a twisted pair cable, with two additional local inputs (DVI, HDMI). It allows each user to connect their video source and take control of the main display by pressing the Step-in button on their individual Step-in module. Modules are offered in HDMI, DVI, DisplayPort and VGA versions all with separate audio input. Additional multi-format modules conveniently combine all the video interfaces, making your system extremely adaptable.

The Digital Step-in boardroom solution won the prestigious Systems Product of the Year award at the 2012 AV Awards and the 2013 Most InAVative Video Distribution Product Award.

SID-X1N

The SID-X1N, Kramer's DGKat™ four-in-one twisted pair transmitter is a high-performance, cost-effective, step-in commander from the Digital Step-in Family. The unit includes four input types: computer graphics video, HDMI, DVI and DisplayPort. In addition, the SID-X1N includes an unbalanced stereo audio input and output. The local 'Step-in' switching button allows the user to take control of the main display through the main switcher.

The SID-X1N works together with the VP-81SID compatible switcher, using Kramer's DGKat signal integration technology to convert video/audio, control and communication signals to signals that run over twisted pair cables. It can also switch between inputs when working as a stand-alone unit, together with a DGKat receiver, e.g. the TP-574, using RS-232 commands over a twisted pair cable. Kramer Electronics recommends using the Kramer BC-DGKat623 or the BC-DGKat7a23 DGKat cable, specifically designed for optimum performance and range.

SID-X2N

The SID-X2N, Kramer's HDBaseT™ four-in-one twisted pair transmitter is a high-performance, cost-effective, step-in commander from the Digital Step-in Family. The unit includes four input types: computer graphics video, HDMI, DVI and DisplayPort. In addition, the SID-X2N includes an unbalanced stereo audio input and output. The local 'Step-in' switching button allows the user to take control of the main display through the main switcher.

The SID-X2N works as a stand-alone unit, together with the HDBaseT receivers, e.g. the TP-580RXR/WP-580RXR, using RS-232 commands over a twisted pair cable. Kramer recommends the use of the Kramer BC-DGKat623 or the BC-DGKat7a23 DGKat cable, to reach up to to 426ft (130m) in normal mode, and up to 590ft (180m) in Ultra (Long Reach) mode (1080p @60Hz @24BPP).

SID-X3N

The SID-X3N, Kramer's HDMI four-in-one transmitter is a high-performance, cost-effective, step-in commander from the Digital Step-in Family. The unit includes four input types: computer graphics video, HDMI, DVI and DisplayPort. In addition, the SID-X3N includes an unbalanced stereo audio input and output. The local 'Step-in' switching button allows the user to take control of the main display through the main switcher.

The SID-X3N works either as a stand-alone unit, or, with the VS-62H Matrix Switcher. When working with the VS-62H, the unit allows to transfer control commands over HDMI.

K-Touch System

Today anyone walking into a classroom, a boardroom or a conference room, expects the room to be equipped with advanced media options – but no one wants to spend the time learning how to fully use them. The projector or flat panel display should turn on with the press of a button, audio controls should be simple to use, and signal switching should be as intuitive as possible.

Kramer Electronics offers you the chance to take control of your AV installations. With our line of easy-to-configure and easy-to install control solutions, you can control virtually any AV room with several presses of a few dedicated control buttons – either a physical button on one of our push button based RC devices or a virtual button on a tablet running our K-Touch application. The installer and the end-user enjoy the ultimate in simple configuration, installation, usage and monitoring.

The new K-Touch system allows you to easily integrate common touch devices as user interfaces in your Kramer-based control system. Configure your Kramer room controller to communicate over standard IT networks with your iOS or Android touch device. Design the required control screen on the cloud screen designer (no need to install it on your PC), for an easily designed, advanced, touch-based room control system. The K-Touch admin and screen builder are online cloud-based systems. Create user interface screens. Download them to any mobile device with the touch of a button. Modify them over the internet at any given moment and re-sync the system to complete the change.

SL-1, 10, 12 Master Room Controllers

Kramer SL room controllers allow you to separate the user interface keypad from the control ports that connect the AV equipment in the room. This generally simplifies control cable routing as compared to all-in-one room controllers that feature user interface and room control in one unit.

SL-1 Features:

- Control Ports – 2 bidirectional RS-232 ports, 3 relay contact closure ports, 2 IR control, 1 K-NET™.
- Site-CTRL™ Compatible.
- Status LEDs.
- Supports Scheduled Tasks.
- USB Port – For uploading configuration file.
- Flexible Control – Ethernet, K-NET™, IR sensor and external IR connector.

SL-10 Features:

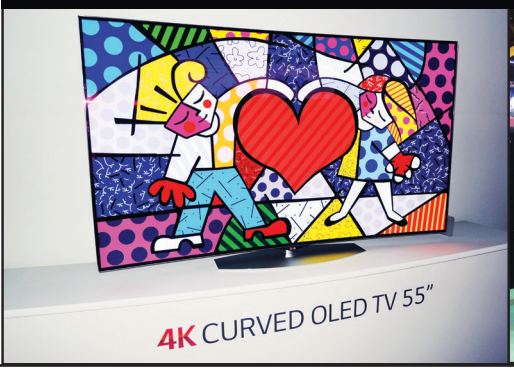
- Control Ports – 2 bidirectional RS-232 ports, 2 general purpose I/O ports, 5 relay contact closure ports, 3 IR output ports, 1 RS-485, 1 K-NET™.
- Site-CTRL™ Compatible.
- Status LEDs.
- Supports Scheduled Tasks.
- USB Port – For uploading configuration file.
- Flexible Control – Ethernet, K-NET™, IR sensor and external IR connector.

SL-12 Features:

- Control Ports – 4 bidirectional RS-232 Ports, 4 general purpose I/O ports, 8 relay contact closure ports, 4 IR output ports, 1 RS-485, 1 K-NET™.
- Site-CTRL™ Compatible.
- Status LEDs.
- Supports Scheduled Tasks.
- USB Port – For uploading configuration file
- Flexible Control – Ethernet, K-NET™, IR sensor and external IR connector.

HDTV (4K) Update:

The Train Is Here - All Aboard!



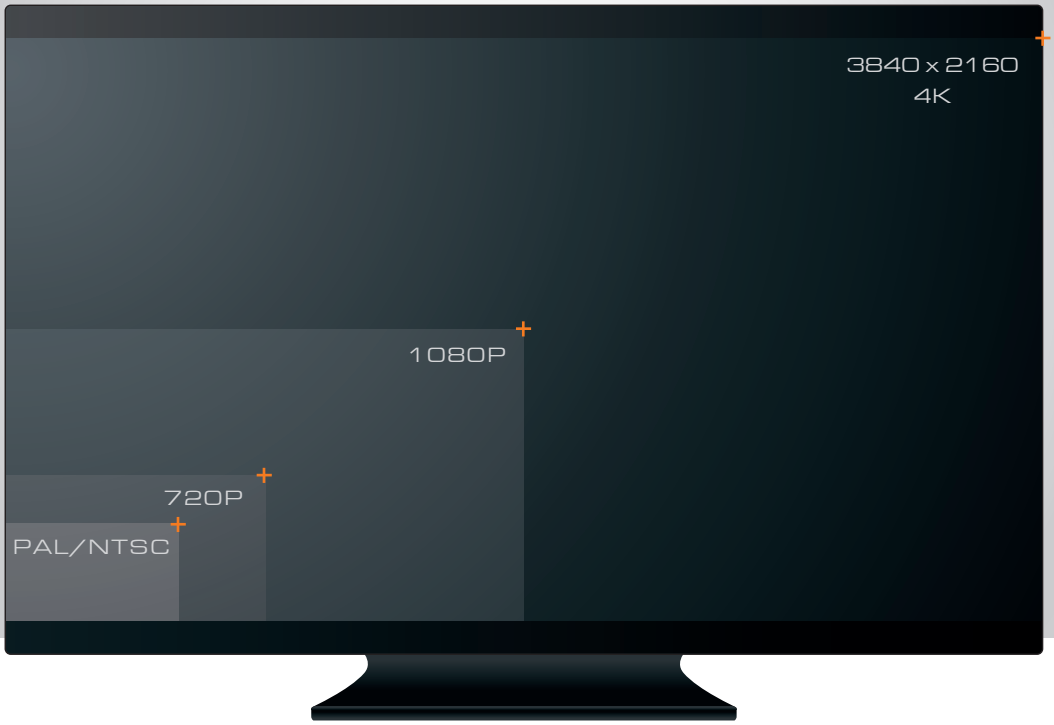
Ever since its debut a year and a half ago, ultra high definition television (UHDTV) has been simultaneously endorsed and disparaged by the consumer and commercial electronics trade press. "It's just another fad, like 3D!" say some. Others can't get enough of the life-like image quality seen on Ultra HD displays.

4K

Whatever you may think about UHDTV (or "4K," as it's commonly called), it's coming – make no mistake about that! Every major TV brand showed a line-up of 4K TVs at the recent International CES, with screen sizes starting at 50 diagonal inches and going all the way up to an astounding 120 diagonal inches.

Need more proof? Prices of UHDTVs have dropped dramatically from the fall of 2012. At CES, Vizio announced it would sell 55-inch UHDTVs this coming fall for just $1,300 while 65-inch versions would be tagged at $2,300. That's a tenfold drop in price in less than 18 months, and by all indications, we'll see 4K TV prices reach today's 2K TV prices in less than two years.

As is usually the case with any new CE technology, marketing hype has gotten ahead of the facts. But UHDTV isn't just about putting more pixels into the display: now, we've got high dynamic range, new backlighting technologies, faster display interfaces, and next-generation codecs for transporting UHDTV signals. *(See page 6 & 18 in this supplement)*



USEFUL DEFINITIONS

UHDTV, Ultra HD, and 4K are all names for the same thing – a new crop of displays with at least four times the resolution of 2K TVs. The most common implementation is Quad HD, which describes TVs and displays that have 3840 horizontal and 2160 vertical pixels. Both measurements double the pixel count from 2K displays; hence the name "Quad HD."

There is also a variation of this standard with a horizontal resolution of 4096 pixels. This is more commonly referred to as "DCI" or "4K DCI." Note that, while the Quad HD format has the same aspect ratio as 1920x1080 displays (16:9, or 1.77:1), 4K DCI has an aspect ratio closer to 1.9:1.

That's not all. At CES, several curved, super-wide LCD screens and TVs were shown with 5120 horizontal pixels and 2160 vertical pixels. These products were identified as "5K" TVs and have an aspect ratio closer to that of the Cinemascope theater format, or 2.37:1. There was even a 20-inch 4K tablet shown in Las Vegas that has a resolution of 3840 horizontal pixels and 2550 vertical pixels, with an aspect ratio of 15:10.

To minimize some of the confusion, the Society of Motion Picture and Television Engineers has developed and adopted two standard descriptors: UHD-1 covers all of the resolutions just mentioned, while UHD-2 goes beyond that – all the way to 8K (7680 x 4320 pixels). Yes, there is an 8K standard and 8K displays, cameras, transport systems, and even 8K broadcasts have been demonstrated in the past two years.

NEW WAYS TO DISPLAY

UHDTV brings with it several interesting technical developments. The first is high dynamic range (HDR), which is a way for digital movie and video cameras to capture images with very high brightness but retain deep shadow detail at the same time. A typical 2K TV might have a brightness level of 100 – 200 nits when set up correctly, but a 4K LCD TV with HDR could have as much as 1000 to 2000 nits of brightness.

HDR requires some extra work on the part of backlights to generate that range of brightness levels. Most LCD TVs employ white light-emitting diode (LED) backlights in combination with color filters to produce full color images. But a new technology, quantum dots, goes far beyond the capabilities of conventional LEDs.

Quantum dots, or QDs, are microcrystalline compounds that emit narrowband, stable colors of light when stimulated by photons. The range of color shades that can be derived from quantum dots is much larger than that created by LEDs. Consequently, color shading is much more accurate and true-to-life. Coincidentally, a new, wider color space (ITU BT.2020) has been defined for UHDTV – and it's almost as wide as that of human vision.

Another component of the UHDTV revolution is fast frame rates. Today, movies are photographed at a rate of 24 frames per second, but we've seen some shot at 48 fps in recent years. And you can go even faster: SMPTE is finishing standards for 50 Hz, 60Hz, 96 Hz, and even 120 Hz frame rates for video and digital cinema cameras. High frame rate capture is a must for live events, particularly sports.

CHANGE IS GONNA COME

There's another, less obvious reason why we're seeing this big push to adopt UHDTV, and it has everything to do with the economics of the television business.

The worldwide television business has been in a slump the past three years, with shipments and sales declining about 2 – 3% per year on average. (Only mainland China is an exception to this trend; they're experiencing double-digit growth in TV sales year-to-year.) That means a lot of LCD factories are producing too many panels for televisions, leading to dramatic drops in panel and TV prices.

Consider that back in 2008, a first-tier 1080p-resolution plasma TV with a screen size of 42 diagonal inches retailed for about $1,200. Today, you can buy a 55-inch LCD TV loaded with "smart" functions (internet connectivity and streaming) for just $600 – a 50% reduction in price with a 31% increase in screen size in just over five years.

The combination of declining TV sales and excess manufacturing capacity mean there's just not much money to be made in 2K LCD panel production. So LCD panel manufacturers (led by China) are looking to move to 4K LCD panels in larger screen sizes, hoping they'll return more profit.

Just as we saw a gradual move away from 720p/768p to 1080p screen resolution over the past ten years, we'll see a similar move to 2160p by the end of this decade, particularly in screen sizes above 55 inches. Eventually, the next large LCD monitor or TV you install will come with 4K resolution whether you want it, or don't!

THE OTHER GUYS

Up to now, we've discussed UHDTV and 4K exclusively in the context of LCD TV and monitor technology. But there's another display platform out there that keeps trying to make a breakthrough – organic light-emitting diodes (OLEDs).

OLED science, which has been around for almost 30 years, has resulted in some of the most breathtaking images even shown on a TV screen. Yet OLED TVs remain difficult to manufacture. Manufacturing yields, or the number of usable panels per manufacturing run, are very high for LCD panels in all sizes. But they're low for large OLEDs; typically on the order of 20% - 30%.

That hasn't stopped TV manufacturers from showing them at CES and bringing them to market. As of this writing, two tier one TV brands (Samsung and LG) offer 55-inch curved OLED TVs, albeit with 2K resolution. But both of them have shown even larger curved OLED TVs with 4K resolution. LG's 77-inch curved 4K OLED was a real show-stopper at International CES and is currently the world's largest OLED TV.

Sony and Panasonic have also shown 56-inch 4K OLED TVs in the past, but haven't disclosed any future plans for selling them. Several of the Chinese manufacturers at International CES (Changhong, Konka, and TCL) featured 55-inch curved OLED TVs in their booths. OLED TV technology will break through eventually, but LCDs will continue to dominate the television and monitor markets for a few more years.

THE UHDTV PIPE

Another obstacle to UHDTV adoption is content storage and delivery. Currently, the production of movies, TV shows, and internet content is centered around 2K, even though many of the "pipes" those movies and videos must travel through are barely fast enough to do the job.

Nevertheless, the internet streaming service Netflix, which has over 30 million subscribers worldwide, announced plans last fall to begin streaming 4K content this year to those few homes equipped with broadband connections that can handle at least a 15 megabit per second (Mb/s) data rate.

For commercial applications of UHDTV, the answer will be dedicated media storage-and-player products. These devices can aggregate UHDTV content from cloud servers and play it back through direct HDMI or DisplayPort connections, or stream it over fast networks. Quite a few of these products were shown at International CES and one (Nanotech's Nuvola) will sell for just $299.

How about optical disc? Right now, there is no standard for 4K Blu-ray, although one is being developed. A move to 4K Blu-ray will also require the adoption of new, more efficient video codecs, like the MPEG-H H.265 (HEVC) standard launched last year.

HERE COMES THE TRAIN

UHDTV has come a long way since its debut. Panel and TV prices are dropping and 4K streaming services have been announced by Comcast, Paramount, Fox, Netflix, and Sony. UHDTV video cards are now coming to market, as are commercial LCD monitors (you'll see several models at InfoComm 2014). 4K digital signage isn't far off, and neither is 4K themed entertainment.

The UHDTV train is ready to depart. Better get on board!

HDMI FIRST

IF FACED WITH AN HDMI PROBLEM OR EMERGENCY, FIRST REMEMBER TO H.E.R.B. IF THE PROB
DIAL THE EMERGENCY NUMBER #(888) 275-6311 AND A KRAMER TECH SUPPORT SPECIALIST WIL

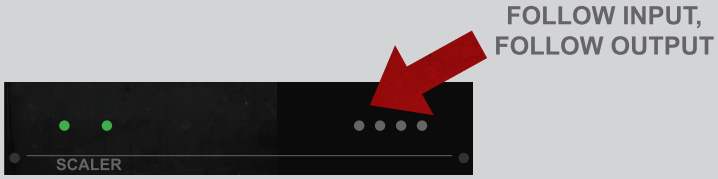
STEP 1: HDCP

make sure all devices are compliant, set devices to follow input/output

1. YOU'RE TRYING TO PLAY A MOVIE FROM A COMPUTER, BUT YOU DON'T SEE ANYTHING ON THE DISPLAYS IN YOUR SYSTEM. DON'T PANIC! AVOID DEROGATORY LANGUAGE, AS THIS WILL ONLY ELEVATE BLOOD PRESSURE.

2. MAKE SURE ALL DISPLAYS AND CONNECTED SWITCHERS/DAS ARE HDCP COMPLIANT, USING KRAMER'S 840HXL HDMI TEST PATTERN GENERATOR.

3. CHANGE HDCP SETTINGS AS NECESSARY TO FOLLOW INPUT OR OUTPUT SIGNALS FOR ALL CONNECTED SOURCES AND DISPLAYS.



4. REPEAT AS MANY TIMES AS NEEDED UNTIL YOUR MOVIE IS DISPLAYED.

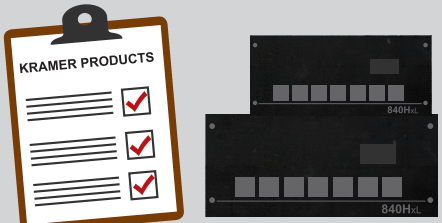
STEP 2: EDID

make sure all devices pass EDID, capture and store EDID as necessary

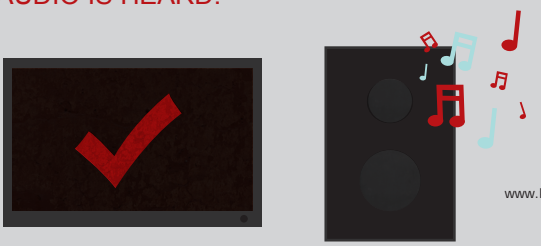
1. THE PICTURES ON YOUR DISPLAY AREN'T THE RIGHT SIZE OR RESOLUTION AND THERE'S NO AUDIO! STAY CALM. RESIST THE URGE TO PURCHASE NEW DISPLAYS.

2. READ EDID FROM THE DISPLAY TO DETERMINE THE VIDEO AND AUDIO FORMATS IT SUPPORTS.

3. MAKE SURE ALL INTERFACES PASS EDID TO YOUR COMPUTER. IF NECESSARY, DEFINE A CUSTOM EDID SETTING FOR THE DISPLAY TO USE WITH KRAMER TOOLS.



4. REPEAT AS NEEDED UNTIL VIDEO IS SEEN AND AUDIO IS HEARD.



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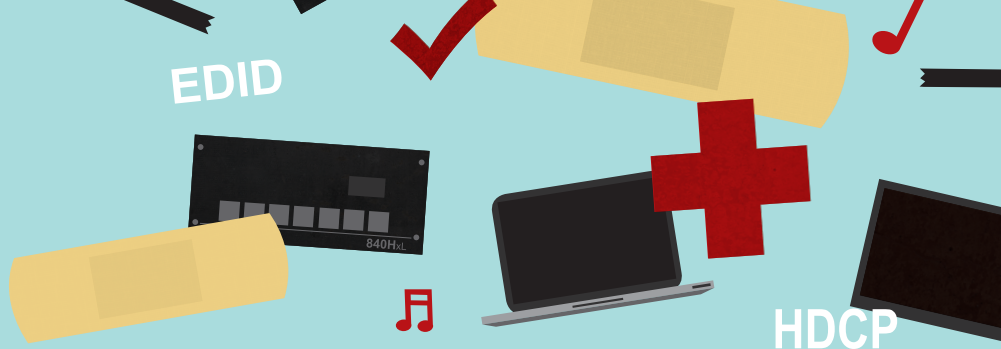
AID

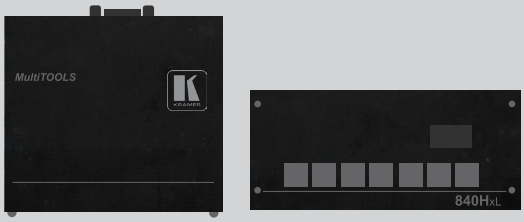
LEM PERSISTS BE SURE TO
LL BE THERE TO HELP.



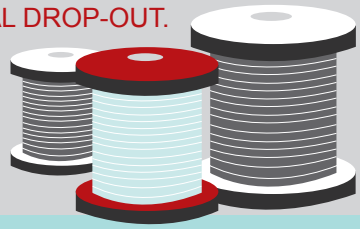
STEP 3: RE-CLOCKING *add intermediate Kramer Tools to restore clock and signal level*

1. IMAGES ON YOUR DISPLAY HAVE NOISE AND "SPARKLES" IN THEM, AND THE PICTURE IS DISTORTED. TAKE A DEEP BREATH AND FOCUS. DO NOT WIGGLE OR TUG ON CONNECTING WIRES, AS YOU WILL ONLY BREAK THE CONNECTORS.

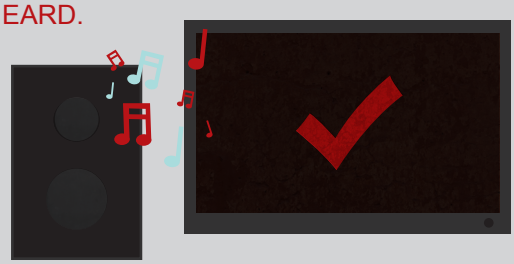
2. INSTALL KRAMER TOOLS IN THE SIGNAL PATH BEFORE THE DISPLAY TO RESTORE SIGNAL QUALITY.



3. IF NECESSARY, UPGRADE YOUR CONNECTING CABLES TO IMPROVE SIGNAL LEVELS. SHIELDED CABLES WILL PREVENT CROSSTALK AND SIGNAL DROP-OUT.

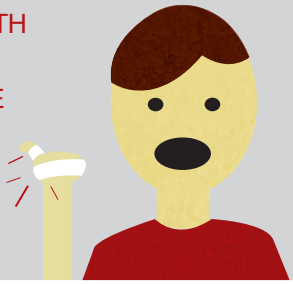


4. REPEAT AS NEEDED UNTIL VIDEO IS SEEN AND AUDIO IS HEARD.

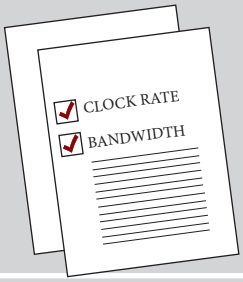


STEP 4: BANDWIDTH *check deep color settings and change as needed, program custom EDID*

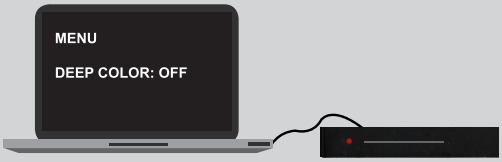
1. IMAGES ON YOUR DISPLAY HAVE NOISE AND "SPARKLES" IN THEM, AND THE PICTURE IS DISTORTED. TAKE A DEEP BREATH AND FOCUS. DO NOT HIT THE DISPLAY, AS THIS WILL REQUIRE ADDITIONAL FIRST AID FOR YOUR HAND.



2. CHECK THE BANDWIDTH SPECIFICATIONS FOR ALL EXTENDERS AND INTERFACES TO MAKE SURE THEY CAN PASS THE VIDEO SIGNALS. REPLACE AND UPGRADE EXTENDERS AS REQUIRED TO MEET SPECS.



3. IF NECESSARY, DISABLE DEEP COLOR OPTIONS ON COMPUTERS AND BLU-RAY PLAYERS. OR, CREATE AND STORE A CUSTOM EDID TO DISABLE THIS MODE, USING KRAMER TOOLS.



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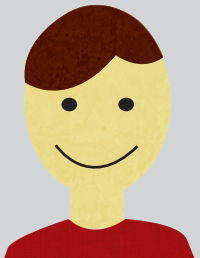
4. REPEAT AS NEEDED UNTIL VIDEO IS SEEN AND AUDIO IS HEARD.



Next-generation Display Interfaces: A Need for Speed

More pixels on the screen mean faster clock and data rates. Are the new versions of HDMI and DisplayPort up to the challenge?

As you'll see elsewhere in this issue of Kramer Connections, UHDTV has arrived and brings with it many technical challenges. A good example would be digital display interfaces: Are they fast enough for UHDTV, particularly in deep color modes? And if they aren't, when will they be?

Here's the short answer to question #1: barely. As for question #2, the short answer is within a year, depending on which interface you're talking about. Read on, and find out more.

A FAMILIAR FACE STEPS UP ITS GAME

The High Definition Multimedia Interface (HDMI) has been with us for 12 years now and it's found on everything from televisions and Blu-ray players to point-and-shoot cameras, gaming consoles, and camcorders. It's also a fixture on desktop and laptop computers, tablets, and smartphones.

While HDMI is a true worldwide standard, its last major upgrade was to version 1.4d in 2009. With UHDTV breaking out, it was time for yet another boost in performance. And we got it last September in the form of HDMI 2.0.

Version 2.0 has several improvements, the most important of which is its top speed – 18 gigabits per second (Gb/s). HDMI 1.4d topped out at 10.2 Gb/s, so the data flows almost twice as fast through an HDMI 2.0 connection. Or does it?

Let's take a closer look at the upgrades. According to the HDMI Forum press release, version 2.0 offers "…resolutions up to 4K@50/60 (2160p), which is 4 times the clarity of 1080p/60 video resolution, for the ultimate video experience." In addition, it can support a maximum of 32 digital audio channels and audio sampling frequencies to 1536 kHz.

HDMI 2.0 also delivers two simultaneous video streams (maximum of 1920x1080p resolution in each stream) to the same screen for multiple users, along with simultaneous delivery of multi-stream audio to a maximum of four different viewers, again on the same screen. There's also native support for the 21:9 widescreen ratio commonly used in movie theaters.

These upgrades are topped off with extensions to the Consumer Electronics Control (CEC) standard for remote command and control of connected AV devices, all through HDMI connectors. All of these enhanced features sound impressive, although the technique of dual-image streaming (DualView) was demonstrated almost a decade ago on DLP rear-projection televisions.

As usual, the devil is in the details. Let's go back to the first item on the list – support for 4K@50/60. This part of the news release left out a few details: at what color depth? And in what color format?

By itself, a maximum data rate of 18 Gb/s doesn't tell us much until we subtract out the 20% of 8-bit/10-bit coding "overhead" present in the HDMI signal. Now, we're left with a maximum usable data rate of 14.4 Gb/s. And if you crunch the numbers, you'll see that is barely fast enough to deliver "...resolutions up to 4K@50/60 (2160p)."

For 24 Hz and even 30 Hz video playback, version 2.0 will work out just fine with 8-bit and 10-bit color. But it runs into trouble with 50 and 60 Hz video, such as what you'd see from live 4K broadcasts or from computer graphics cards.

To see why, let's run some simple calculations. Including the blanking interval, a Quad HD signal has a total of 4176 horizontal pixels and 2222 vertical pixels in each frame of video. Now, multiply those two numbers together and then multiply the resulting product by 60, and you get 556,744,320 – or 556.7 MHz, which is the resulting pixel clock for a 2160p/60 display signal.

Next, multiply the pixel clock by 3 for the RGB color format, and one last time by 8 for 8-bit color sampling. What do you come up with? 13.36 Gb/s, which is just under the maximum usable data rate of 14.4 Gb/s.

What if you want to display 10-bit color? Let's do the math again: 556.7 x 3 x 10 = 16.701 Gb/s, which exceeds the 14.4 Gb/s cap of HDMI 2.0.

Another challenge is presented by the new UHDTV color space for UHDTV (BT.2020), which is quite a bit larger than the existing HDTV color space. More shades of color mean greater bit depths and more data, which translate to faster data rates.

And that's why we say HDMI 2.0 is barely fast enough for UHDTV – it isn't future-proof in its current implementation. With advancements in high dynamic range imaging and high frame rate video, HDMI 2.0 is going to be severely challenged to keep up with the increased need for speed.

WE TRY HARDER

Is there another way around this obstacle? Yes. DisplayPort, the "other" digital display interface, also has some upgrades scheduled for its immediate future. Version 1.2, the current implementation since 2007, already has a faster data rate than HDMI 2.0. DisplayPort is a pure digital interface, using data packets instead of transition-minimized differential signaling (TMDS) as HDMI and DVI do.

DP's structure employs four data "lanes" with a maximum rate of 5.4 Gb/s per lane or 21.6 Gb/s overall.

Like HDMI, it also transports data in an 8-bit/10-bit format, so 80% of its maximum rate is available for display and audio. That works out to 17.28 Gb/s, which as we can quickly see from our earlier math, is adequate to display a Quad HD image (2160p) refreshed at 60 Hz with 10-bit color depth.

The next upgrade to DisplayPort (version 1.3) will come this fall, boosting the overall data rate on each lane to 8.1 Gb/s and the overall data rate to a whopping 32.4 Gb/s. Of that, 80% or 25.92 Gb/s will be available to transport display and audio packets. That's fast enough to support Quad HD @ 60 Hz with 12-bit color and 4096x2160 @ 60 Hz with 10-bit color.

The goal of DisplayPort 1.3 is to support 8K displays with 60 Hz refresh. To do that, a light compression system will be introduced for the first time. This system will use entropy coding and is called Display Stream, and will work with all versions of DisplayPort that support all four data lanes. That includes Mini DisplayPort, commonly found on Apple desktops and notebook computers.

The faster speed caps on DisplayPort may lead more manufacturers to support it, particularly since there are no royalties associated with the interface. The first 4K desktop monitors are already making their way to market and all of them (so far) are equipped with both HDMI and DisplayPort connections. However, these "first out of the gate" products are limited to 30 Hz refresh rates.

WATCH OUT FOR...

In closing, one word of caution: Some interface manufacturers are starting to label their products "4K Certified" or "4K Ready." As we've just seen, even HDMI 2.0 isn't truly "4K Ready" if high frame rate content with deep color needs to be displayed. So look past the logos and marketing slogans, and work the numbers to see for yourself if HDMI or DisplayPort will support your particular UHDTV application!

Kramer Opens Gateway to HDMI System

When GateWay Community College (GWC) in Phoenix, AZ, decided to build a new Integrated Education Building (IEB) and remodel its Maricopa Skill Center (MSC) campus, one of the goals was to incorporate state-of-the-art audio/visual and IT classrooms that would allow students and faculty access to digital A/V and HDCP content in a simple-to-use configuration. They hoped to create an intuitive model that was identical in all of the rooms, to reduce the need for frequent troubleshooting by technical support staff. The college has an approximate attendance of 13,000 students and is part of the largest community college district in the United States – Maricopa Community College District.

GateWay's MSC remodel/addition would feature 23 new classrooms, a PC networking lab, vocational skills labs, two conference rooms and a tri-divisible multipurpose room. The new 125,000-square-foot IEB would have 15 dual-screen classrooms, a single screen art studio and a three-screen multipurpose room with seating capacity of 200 plus seats.

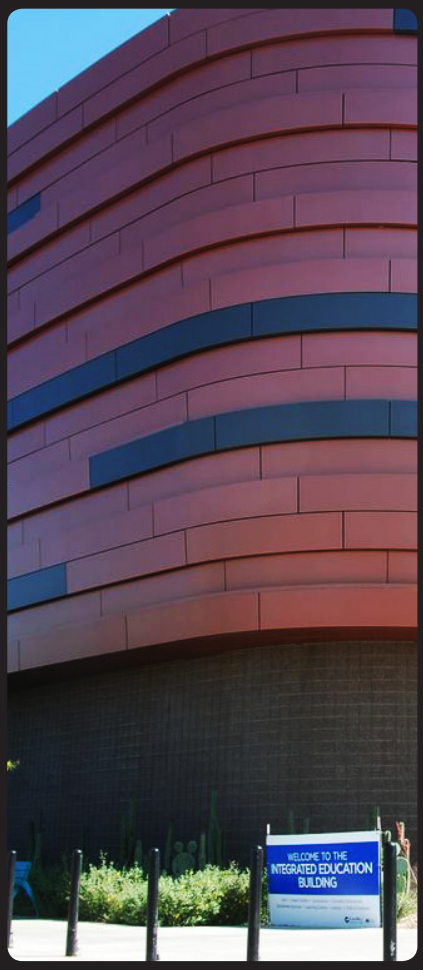
According to Senadz Lubovac, coordinator of audio visual information technology at GateWay Community College, the team wanted the capability of using both digital and analog devices in the classrooms, and they hoped to reduce the size and cost of lectern-to-projector cabling. "After comparing the features, complexity and pricing of a variety of products, we decided to use Kramer as a core infrastructure in designing our standardized classroom, because it met our needs to handle both HDMI and HDCP," Lubovac said. "In addition, Kramer's pricing really made a difference."

The GateWay A/V team selected a slim lectern that houses a built-in PC and document camera and has a flip top for a laptop computer. It also contains the core of the classroom system, the Kramer VP-729 ProScale® digital scaler/switcher and Kramer TP-573 and TP-574 DGKat™ twisted pair transmitters/receivers for HDMI, bidirectional RS-232 and IR signals. Each room features AMX control, motorized screens, LCD projectors, microphones, audio amplifiers and IP cameras. The lecterns offer front plates for additional student connections to the system.

The conference rooms use the VP-729 at the heart, then add videoconferencing equipment and a 60- or 70-inch display. The multipurpose rooms follow the same configuration, and also include a Kramer VS-66HDCPxl 6x6 DVI Matrix switcher, TP-581T/582R HDBaseT™ twisted pair transmitters/receivers and FC-46xl audio de-embedders.

"This design with the VP-729 scaler/switcher as the backbone enables us to display any analog or digital AV device on the screens, with an easy interface control," Lubovac noted. "The goal was to design for the end user and get all the rooms to operate exactly the same way."

The VP-729 scaler/switcher also allows the broadcast of emergency messages in classrooms, a key communications tool that can reach students in all Kramer-equipped classrooms each day.



Gateway Integrated Education Building

Designed standardized classroom

BYOD, Wireless, and Collaboration =

A New Way to Meet

Ad Hoc. Shared annotation. BYOD. Mirroring.

What do these words all have in common? They describe a new way of holding meetings, one which is centered around the use of tablets and smartphones as presentation platforms.

Today, a "meeting" can be two or more people, sitting on a couch or chairs in an atrium. Or it can be several people in a conference room, connecting over wireless to a larger LCD monitor. It can include multiple participants logging in on Skype or other popular remote meeting applications.

Tablets and smartphones, or Bring Your Own Devices (BYOD) as they are commonly called, are wonderful gadgets. But they bring their own set of connectivity challenges to meetings: how do you connect one into an existing AV system? Can you "mirror" the content on the BYOD screen to one or more external screens? How about sharing and annotating documents with meeting participants?

The AV industry has its hands full trying to support group collaboration with BYODs. Several AV solutions have already come to market, but all of them have shortcomings. Now, let's imagine we could create a better group collaboration system; one that really works and is user-friendly.

Our "ideal" collaboration system should be able to handle dozens of participants - maybe even several hundred - from any BYOD or computing platform, including those who log in remotely with common meeting and conferencing applications.

Continuing down our wish list, logging in should be intuitive – enter a room code and password, and then launch an app. Our "ideal" system should support all popular operating systems (Windows, Mac OS, and Chrome), plus common productivity software like Microsoft Office, and application software such as Adobe Photoshop.

Image tiling is also important. How about space to tile up to 6 desktops on a single screen, or up to 12 participants on two display screens? Displaying your desktop shouldn't be any more difficult than tapping a button. While we're at it, why not allow for multiple mouse operation on the main screen by multiple participants?

How about drag-and-drop file sharing? Wouldn't it be great to just select a file, drag it from your folder to a central folder, and immediately download it to all participants? Even better; how about launching an application that can be run by multiple participants, one that any participant can edit and annotate?

It goes without saying that our "ideal" group collaboration platform will support Wi-Fi connectivity. That would allow us to stream video from BYODs and other computers. But what if the Wi-Fi connection isn't always fast enough for reliable streaming? In that case, we should be able to upload the video file quickly for reliable playback on the main display, using a simple drag-and-drop operation.

Come to think about it, we should also support existing wired AV connections. So a digital display input to our "ideal" collaboration system is a must. We could then use external presentation switcher/scalers or step-in controllers to connect even more devices. We could also use wireless HDMI connectivity, if we wanted!

OK, stop dreaming. Now we can have everything on our wish list, thanks to Kramer's new collaboration platform. Easy connectivity, file sharing, shared applications and annotation, wireless and wired inputs, and intuitive operation – it's all here, and waiting for you! No need to pinch yourself…

AQAV:

New Standards for AV Quality

Kramer Electronics is proud to announce it became an Educational Partner and Sponsor of the AQAV program earlier this year. As one of the first manufacturers to join and endorse this program, Kramer Electronics continues its industry leadership role in supporting comprehensive AV training and education.

"Adding the AQAV courses and certification programs to our current Kramer Academy courses is the latest step in Kramer's ongoing effort to offer quality education to the AV industry," said Malissa Dillman, Kramer's Director of Training and Education. "We are very excited to be one of the first manufacturers to partner with AQAV and to be the first partner to deliver this unique training program."

AQAV is an organization dedicated to improving the operational art of designing and installing audio visual technology. Engineered audio visual systems are increasingly becoming more complex and difficult to integrate, so a focus on the quality management of these systems and those who design and install them, benefits the AV industry and all of its stakeholders.

One of the first tasks for AQAV was to define a standard - AV9000 - to certify that every new AV system complies with what the client had originally ordered. This is done by defining metrics in three areas - product, practice, and performance. This de facto standard has since been used successfully to flush out all defects from the simplest to the most complex AV systems, and has more than proved its worth in thousands of installations.

Kramer Electronics, Cisco and NTI Americas have either endorsed or implemented the AV9000 Compliance standard as the criteria to stratify their channel partners. "We are presenting a tested, proven methodology to our integrators that will enhance their business dealings with us and increase their company's profitability," stated Dillman.

Adopting quality standards and boosting profitability and productivity - all without increasing sales - is a unique concept that no one else in the industry is offering. "We are proud to help our clients make the most of this opportunity, "said Dillman. "The AQAV program and certifications (CQT, CQD) represent more than a diet. They're a complete lifestyle change."

Mario Maltese, founder of AQAV, stated, "This program was developed to define and quantify AV industry metrics that can be applied to any ISO 9000 company. ISO 9000 is the internationally accepted, auditable standard for quality management systems. AQAV is following the same successful path taken by other industries; notably automotive, aerospace, and telecommunications; all of which have dramatically improved quality and

"Being AV9000 compliant is a major plus for providers that want to work for us. We don't actually require it yet, but I see the day when we and others will insist on it. It eliminates untold costs and aggravation that the client won't and the integrator shouldn't accept. No question the business is trending this way."

Elaine Manfredonia, Vice President,
JPMorgan Chase, New York, NY

"We've built AV9000 into our campus facility standards and follow it on all our installations. It has everyone working from the same page and explains the 'why' as well as the 'how'. It's turned into a friendly competition between the installation team and the commissioning team."

Dan Doolen, Chief Instructional Media Systems Engineer, University of Illinois, Urbana, IL

decreased costs with similar programs. However, it is not necessary to be ISO 9000-certified to benefit from the AQAV program. "

How does AQAV benefit everyone in a company? By following the AV9000 standard, a company monitors, documents, and measures every significant milestone in the development of an engineered AV system. This systematic, detailed approach provides for quality assurance, not just quality control. It results in a completed AV system in a shorter period of time; one that's free of defects and makes the old, profit-draining "punch list" obsolete.

AQAV has developed two certification programs, Certified Quality Designer (CQD) and Certified Quality Technician (CQT) to apply these standards and methodologies to your business.

CQD training ensures that the system will comply and perform as intended while the system is still a paper model in the design phase. Corrective actions can be developed at a fraction of the costs compared to when they are uncovered after the system is installed. The CQT program rounds out the package with intensive training that covers inspection and performance testing during staging and final field commissioning of AV systems.

Both programs are three-day training courses with a final exam administered at the end of the class. Certification exams include both written and hands-on demonstrations of proficiency using standard instrumentation. Prerequisites for the classes are (a) either a current InfoComm CTS certification or two years of professional experience for the CQT class, or (b) a current InfoComm CTS-D certification or four years of design experience for the CQD class.

We are very excited to announce Kramer Electronics will be sponsoring a third program, the "Certified Quality Leader" or CQL, to be offered for the first time this fall. CQL is designed as a one-day course for C-level (executive) teams to learn about the hidden and potentially damaging costs of poor quality. The class will take an in-depth look at the ROI involved by implementing and following a quality assurance program, training management, and quality leadership that supports continual improvement and development of quality assurance procedures and methodologies.

For more information on these exciting new opportunities contact Malissa Dillman, Director of Training & Education at mdillman@kramerus.com or visit our website at www.kramerus.com.

KRAMER INSTALLER SOLUTIONS

Kramer TBUS® Products - Elegant Table Mounted Cable Connectivity Solutions

An important challenge Pro AV system designers are often faced with is how to provide an elegant and sophisticated integrated solution in conference rooms, training centers, classrooms, call centers or other similar applications for AV signal management and distribution. One that provides for the effective management of all of the video, audio and network signals along with the power, into one enclosure that will combine all these elements in the most unobtrusive, attractive and functional manner.

Kramer Electronics offers a comprehensive line of intelligently designed fixed (preconfigured) and modular Table Mounted Cable Management Solutions we call our TBUS (Table Bus) products. They are ideal for any professionally integrated AV systems. Kramer TBUS models are easily installed in any flat surface further ensuring a quick and efficient installation.

Kramer's TBUS table mounted cable management and connection assemblies are designed to provide maximum connectivity in the smallest possible footprint. Many of our TBUS models are modular and can be configured with the appropriate selection of the signal inserts and power sockets necessary for your application. Our TBUS products are available in a selection of the various frame styles (rectangular, round) and sizes and also come in different finishes to further ensure perfect integration in any AV system.

Kramer also offers a compact cable retractor we call the K-ABLE-BOX that can be used as a standalone product or in conjunction with our TBUS models. Convenient to install, the K-ABLE-BOX can be purchased with various cable types installed. Cable types available are VGA, VGA and audio, HDMI/Ethernet, CAT 6 twisted pair, audio (3.5mm), USB–A and DVI.

K-Lock™ - The Ultimate Pull Resistant Connector Technology for Kramer HDMI Cables

KRAMER K-LOCK

Everyone in the Pro AV industry is familiar with the challenges that may arise while using HDMI cables, even in the simplest installation. The tendency of lower gauge (thicker – higher quality) cables to weigh down the cable connector and pull it out of the socket has a substantial impact on the final result. Even the slightest tension can result in signal loss, and when it comes to longer distances, the chances for signal loss are even higher.

To make your installation a success, Kramer Electronics developed our K-Lock technology. It is our pull resistant connector that provides up to 15lbs (6.8kg) of retaining force. K-Lock is equipped with small springs on the surface of the connector that hold the cable tightly in place.

Available HDMI Locking Solutions in the Market

SOLUTION	LOCKING FORCE	SAFE DETACH	SECURE PIN	HDMI DIMENSION SPEC	BACKWARDS COMPATIBLE	EASY INSTALL	SUPER SLIM PLUG POSSIBLE	EXTRA COST
Competitor A Sliding spring release	High	Yes	No	No	Yes	Yes	No	Yes
Competitor B Adapter with zip tile secure	Very high	No	No	No	No	No	Possible	Yes
Competitor C HDMI plug with thumb screw	Very high	No	No	No	No	Moderate	No	Yes
Kramer Electronics K-Lock	High	Yes	Yes	Yes	Yes	Yes	Yes	**No**

Key Kramer Speaker Technologies

Complete K-overage ESD™ (Equal sound Dispersion) is an innovative, patent pending Kramer technology. It provides built–in stereo separation in a single ceiling tile speaker. Kramer speakers with Complete K-coverage ESD are constructed with a central driver and four pivoting tweeters in a sealed enclosure. The pivoting tweeters are the unique aspect in this design. As a result, one Kramer ceiling speaker with this technology can be used in place of competing products from other manufacturers where more than one speaker is required to achieve the same level of sound dispersion. The Kramer Complete K–overage ESD™ provides unmatched sound response for both voice and music in ceiling tile speakers along with unparalleled value for the professional AV market.

Be Sure the Message is as Clear as Possible with **Kramer Speakers**

Kramer offers three distinct families of speakers which will meet every Pro AV sound reinforcement goal. Kramer offers the Galil, Yarden and Tavor lines of speakers. Our Galil family is our line of value oriented closed back ceiling and on-wall commercial speakers for AV. The Yarden family is our high performance line of closed back ceiling, ceiling tile and on-wall commercial speakers with Kevlar Woofers and where applicable, Titanium Tweeters. The Tavor models are powered ceiling tile and on-wall speakers that also have Kevlar Woofers and Titanium Tweeters.

All our speakers can operate as either 70V or 100V and are 8ohm.

Keep an eye out because soon Kramer will add a fourth family, the Dolev family which will be our line of studio monitor speakers. To complement our extensive line of speakers, Kramer has also developed and introduced full line of audio amplifiers for professional AV applications.

Wireless AV Update:
Kramer KW-11

The increasing popularity of tablets and smartphones – aka Bring Your Own Devices, or BYODs - is creating great interest in "going wireless" for display and audio connections to projectors, televisions, and display monitors. In the past year, more manufacturers have brought out products to do just that.

There are a limited number of channels worldwide allocated for Wi-Fi and other wireless activity, and wireless HDMI kits (classified as "white space" devices) must conform to regulations of transmitting power and channel selection to prevent interference to other services. In North America, 24 channels in the 5 GHz U-NII band have been set aside for low power "white space" operations.

The maximum operating range of wireless display connectivity devices is determined by many factors, such as channel activity, physical obstructions, and the targeted bit rate. Generally, wireless display connectivity systems are limited to in-room use with a maximum range of 30 to 50 feet, but 5 GHz signals can and do penetrate non-metallic surfaces.

The Wireless High Definition Interface (WHDI) system is a good choice for professional AV applications. Basic WHDI systems use 9 of the 24 "white space" channels mentioned earlier to make wireless HDMI connections. Latency is very low; less than 1 millisecond.

720p-resolution video is transmitted in a single 20 MHz channel @ 166 Mb/s and 1080p video @ 372 Mb/s, using two 20 MHz channels. This is accomplished by assigning weights to bits of the signal; with the most significant bits (MSBs) receiving priority over least significant bits (LSBs). For example, luminance information receives priority over chrominance information. This process reduces the actual bit rate and is a form of compression, but also functions as a real-time video streaming protocol.

Kramer's KW-11 WHDI connectivity kit operates on U-NII channels 36 through 48 and 149 through 165. The small transmitter stick plugs directly into an HDMI jack or connects through an HDMI extension cable. 5-volt DC power for the stick is supplied though a companion wall transformer or a direct connection from a computer to the mini USB jack on the side of the stick.

When powered up, the stick and receiver must first locate a channel and link together. Once that is done, the "Connected" LED will light up. Next, the HDMI signal from the source must be linked, using EDID and HDCP exchanges (when necessary). Once this link is made, the "Video" LED will also light up. Depending on other activity in the 5 GHz band, this linking process can take a few seconds.

Once both LEDs are lit, the KW-11 provides a full-bandwidth HDMI connection between the video source and the connected display, switch, or distribution amplifier. The transmitter and receiver do not have to be visible to each other – WHDI links can take place through furniture, walls, desks, tables, and windows. But signal range is greatest when there are few obstructions between the stick and receiver.

The KW-11 was recently certified to comply with the requirements of IEC specification 60601-1-2, "Medical electrical equipment; Part 1-2: collateral standard: Electromagnetic compatibility – Requirements and tests," third edition (2007). Presently, the KW-11 is the only wireless display system certified for use in operating rooms as part of a medical imaging system.

K-Touch:

It's All About "More For Less"

Let's face it: in discussions of AV hardware, control systems don't usually get their due. They're not as "cool" as wireless HDMI or as "hot" as presentation switcher/scalers.

Yet control systems are just as important as any other component in an integrated AV system. Thanks to advances in software and graphic design and economies of scale in manufacturing, touch panel control systems now offer plenty of flexibility and power with simple, intuitive human interfaces.

The preponderance of tablets is what's really behind these trends. Now, anyone can control a complex AV system from anywhere with a tablet, and design the tablet control interface with a personal touch.

Kramer's latest iteration of K-Touch controllers offers a Web-based (HTML) program, K-Touch Builder, for building your own touch control graphical user interface (GUI). It uses drag-and-drop graphics and you can access a database of over 15,000 different images to label any control; you can also upload your own custom graphics and images.

Importing these GUIs to mobile devices (tablets and smartphones) is also a snap. Load the K-Touch iPad™ or iPhone™ app to your mobile device, enter your username and password, and use the app to locate your new mobile interface from cloud storage and download it automatically; of course, RS-232 and IR commands are supported along with IP-based command strings as well.

Even better: K-Touch offers scalable design and installation. You can add additional controllers (wall plate or box) by linking them to the same custom GUI you've designed, over your existing network interface using K-Touch. There is a real cost savings in reducing the number of dedicated touchscreen panel controllers and moving instead to tablets.

Need to change the GUI? Add or delete a controlled device? It's easy: start up K-Config Driver Manager, add your device drivers, and select your virtual buttons from K-Touch Builder. Then upload the new GUI to all tablets that use the interface using the K-Touch app.

The savings can be substantial; as much as 50% over competitor's systems. Here's an example: a simple control system, consisting of a K-Touch processor, iPad with full HD resolution, wireless router, and site license, offers as much as 70% savings over conventional touchscreen control systems. The difference in cost is enough to pay for six more iPads!

The beauty of a tablet-based control system is that you decide what level of functionality you need, and what you don't. There's no sense in paying more for control features you won't use! You can indulge your creative side with multiple templates for Kramer products, adding custom backgrounds and logos to finish off your design.

On the hardware side, Kramer's new SL-12 control processor is a perfect match for any control system. This compact housing provides four bidirectional RS-232 interfaces, 4 infrared control interfaces, and 8 dry-contact relay closures, along with 4 general purpose I/O ports.

The SL-12 also includes an Ethernet port, an RS-485 connection, and a front-panel micro USB jack for uploading configuration files. A single SL-12 can control two virtual devices with a total of 64 virtual buttons. Need more? Just add another SL-12 to double capacity.

If you are getting ready to install a new or upgraded control system, it's time to check out the K-Touch line and see how you can get more (a LOT more) for less!

Just for fun

Facts

February: Super Bowl Fun Facts

Hopefully by now, everyone has recovered from either their zealous celebrations or terrible heartbreak caused from the Super Bowl earlier this year. But did you know that one 30-second commercial aired during the Super Bowl costs at least $2,800,000? In case you're still in need of a football fix, here are some more fun facts about the Super Bowl.

- The Super Bowl is measured in Roman numerals because a football season runs over two calendar years.
- During the Super Bowl, over 14,500 tons of chips are eaten.

- Of the top 10 most watched American television programs of all time, nine of them are Super Bowls. In fact, Super Bowl XLIV in 2010 unseated the M*A*S*H* series finale as the most watched show in television history with over 106.5 million viewers.
- 700,000 footballs are produced every year for use during the NFL season. 72 of those balls are used for the Super Bowl.
- It's estimated that the net amount of money wagered worldwide on a Super Bowl game is over 8.2 billion dollars.

August: National Golf Month

Did you know that August is National Golf Month? As summer approaches, this is a great excuse to get outdoors and hit the green! In between holes, here are some fun facts you can share with your buddies on the course.

- The first recorded game of golf took place in 1457, however evidence suggests that the game was actually played for the first time over a century before that in St. Andrews, Scotland.
- The first golf balls were made of leather and stuffed with feathers. These were used up until 1848.
- In 2016, after an absence of 112 years, golf will return as a featured sport at the Olympic Games in Rio de Janeiro, Brazil.
- There are 336 dimples on a regulation golf ball.
- Golf balls can travel a lot further on hot days. A golfer swinging a club at around 100 mph will carry the driver up to eight yards longer for each increase in air temperature of 25 degrees!
- The record for the most holes played in one week is 1,850 set by 70 year old Bob Kurtz.
- The odds of making two holes-in-one in a round of golf are one in 67 million!

April: Arbor Day

The last Friday in the month of April every year is Arbor Day. Arbor Day is about planting trees and celebrating the importance of these tall, green creatures. You might already know the basics – trees produce oxygen and provide us with resources – but did you know that they can also prevent crime and help fight cancer? Read on for fun facts about these super heroes also known as trees.

- Arbor Day was first observed in Nebraska in 1872. That state is now home to one of the world's largest forests planted by people – over 200,000 acres of trees.
- Only one in 10,000 acorns will ever become a tree.
- 1.5 billion seedlings are hand-planted in the United States each year, in addition to nature plants.
- Trees can help fight cancer! A cancer-fighting agent called "taxol," produced by the Pacific yew tree, is used to combat ovarian and other types of cancer.
- Trees prevent crime! From 2005 to 2007, the U.S. Forest Service studied the correlation of crime and the presence of trees in Portland, Oregon and found that areas with larger trees experienced less crime than those with smaller ones. The study concluded that trees serve as a "symbolic safety net." Criminals assume that neighborhoods and houses

- Certain types of trees (mostly willows and poplars) "warn" each other when they're attacked by insects. They do this be producing an excess of chemicals in their leaves which then warns their neighboring trees. Following this warning, the nearby trees will begin to produce the same chemicals, preventing a similar insect attack from happening to them.
- Trees are one of the longest-living organisms on Earth; the Bristlecone Pine tree is 4,600 years old!

July: Fireworks

The summer season is filled with ice cream, trips to the beach, family vacations, warmth, and of course fantastic displays of fireworks. These wonders of the sky are a classic summer staple, but did you know that fireworks actually have a long history? In fact, the earliest documentation of fireworks dates back to 7th century China! Read on for more fireworks fun facts:

- The first recorded fireworks in England were at the wedding of King Henry VII in 1486.
- The record for the largest firework show consisted of 66,326 fireworks in Portugal in 2006. The largest firework rocket is over 28lbs and was made and launched also in Portugal in 2010.
- Different chemicals are used to produce different colors of fireworks. For instance, copper is used to create blue fireworks. Barium is used to create green fireworks and sodium is used to produce yellow fireworks.
- China is the largest manufacturer and exporter of fireworks in the world – nearly 90% of all fireworks originate in China.
- Over 213.12 million pounds of fireworks are purchased annually in the United States!

January: National Soup Month

While you may already know that there are many kinds of delicious soup, you may not have realized that this culinary staple is as rich in history as it is flavor. Read on for the best of soup trivia!

- Soup was initially known as "sop" which consisted of a piece of bread served with broth to pour over it. As time went by, the bowls of broth became deeper and deeper, and the broth became the focal point of the meal instead of the bread.
- The first soup dates all the way back to about 6000 B.C. It was first made of…hippopotamus!

- The original Campbell's soup labels were orange and blue. They were changed after Herberton Williams (Campbell's treasurer, comptroller, and eventual assistant general manager) saw the Cornell University football team play again the University of Pennsylvania. Apparently, he really loved the Cornell uniform colors of red and white, so he proposed the color change!
- Frank Sinatra always asked for Chicken and Rice Soup to be available in his dressing rooms before going on stage.
- In Nebraska, it is illegal for bar owners to sell beer unless they are brewing a pot of soup.
- In the United States, people sip over 10 billion bowls of soup every single year! In addition, 99% of all U.S. homes buy soup, making soup a $5 billion dollar business!

October: National Pizza Month

As Michael Scott once said, pizza is "the great equalizer;" everyone loves it! This delicious food has a way of bringing people together, whether it's at a party or at the dinner table. It's scrumptious, fun, and an easy Friday night dinner. While pizza has certainly advanced since prehistoric times, to pies with toppings from tortellini to buffalo chicken, some things never change: everyone loves pizza. Read on for more fun facts about the 'za!

- Roughly 1,000 years ago herb-and-spice-covered circles of baked dough grew exceptionally popular in Naples, Italy. Known as focaccia, these rounds were served as an appetizer or a snack.
- Marie Antionette's sister, Marie Carolina, wife of Ferdinand I of Sicily and Naples, had ovens built in the forest so she could enjoy pizza while the Royal Hunting Party feasted on wild ducklings and pigs killed in the hunt.
- In 1830, pizza truly emerged with the opening of the world's first pizzeria, Port'Alba, where the pizzas were cooked in an oven lined with lava from Mount Vesuvius, a volcano located on the Bay of Naples.
- The popularity of pizza significantly rose throughout the United States when World War II servicemen returning from Italy began opening pizzerias and raving about that "great Italian dish."
- The world's largest pizza was built on October 11, 1987 by Lorenzo Amato and Louis Piancone. The pizza covered 10,000 square feet and measured 140 feet across. It weighed in at 44,457 pounds, consisting of, among other items, 18,174 pounds of flour, 1,103 pounds of water, 6,445 pounds of sauce, 9,375 pounds of cheese and 2,387 pounds of pepperoni. The pie was cut into 94,248 slices and eaten by more than 30,000 spectators at the baking in Havana, Florida!
- Each man, woman and child in the United States eats an average of 46 slices (23 pounds) of pizza a year. Also in the U.S., there are about 350 slices of pizza eaten each second!
- Pizza is a $30 billion per year industry. Pizza Hut is the largest seller of pizzas in the world. They have more than 12,000 restaurants and delivery locations worldwide. In the United States, they hold 17% of the pizza sales market.
- 94% of the population of the U.S. eats pizza – approximately 3 billion pizzas are sold in the U.S. each year!

Kramer Profiles

David Goldsmith - Director of National Accounts & Group Sales, 2012 Salesman of the Year

After working in the medical, TV, Freelance Remote, dealer and integration side of the Pro AV Industry, Dave Goldsmith decided to round out his career and work with a manufacturing company. His good friend, now boss, Kent Cawthorne, the current VP of Sales, recruited Dave while he was working at PESA and suggested that Dave join him at "the best company" that he had ever worked for, Kramer Electronics USA. Dave took him up on his offer and was hired as the Central Regional Sales Manager for Sierra Video brand products in 2008. Shortly thereafter he was promoted to Central Regional Sales Manager for Kramer and Sierra Video brand products. On January 1, 2014 David Goldsmith was promoted to Director of National Accounts and Group Sales.

"I really enjoy working with the management of some of the best integration companies in the world, and with organizations that are helping their members to run their businesses with the highest level of quality and integrity. It is challenging, yet exciting, as we work together to achieve our mutual goals of growing profitable sales and raising the level of professionalism in our industry," Goldsmith stated.

David was born in Wauseon, OH and grew up on a farm in Swanton, OH just west of Toledo. He currently resides in Perrysburg, OH, with his wife Linda and they are blessed with four wonderful children and two wonderful son-in laws. Michael, Emily (Matt), Sarah (Levi) and Nathan are the pride of his life. His family is excited to announce that their daughter Sarah is expecting in September of 2014. They also have two Maltese puppies, Ruby and Bruzer. In his free time Dave loves to golf, fish, shoot skeet and target pistol. He's a sports fanatic and will watch any game at any time; however, he believes hockey is the best sport ever. "Go Red Wings!"

Paul Bogan – Regional Sales Manager & 2013 Salesman of the Year

Paul Bogan had previously worked for Kramer US President Dave Bright at Mitsubishi, where they built a division selling display and imaging products to a network of professional AV dealers and integrators. Their division ended up being restructured, but a core group stayed in touch as good friends. Paul happened to land at Inline, Inc. where he spent several years learning the business of signal management technology. Dave Bright eventually connected with Kramer and, when it was time to look for help out West, Dave reached out to Paul.

Paul joined Kramer US in 1998, and had a multitude of responsibilities over the years. He coordinated trade shows, conceptualized catalog content, conducted trainings, and spent about four years as a product manager. Almost 16 years later, Paul is the Regional Sales Manager for the entire west coast.

"Every day at Kramer is about building relationships that translate to confidence in our products and Kramer as a company. Whether it's a new product training visit, helping to design a system, working a tabletop show, solving an administrative issue, or any of a hundred other typical activities, the goal is the same: represent Kramer with professionalism and integrity," Bogan stated.

Bogan was born in Wichita, KS and was raised in Colorado and Arizona before he ended up in Fullerton, CA where he received a degree from Cal State in Music Education. Paul's love of music stemmed from his childhood; he listened to every kind of music on the radio, and played all of his dad's records on repeat. The summer after 6th grade, Paul's dad brought home a guitar from a yard sale and he, essentially, never put it down. Paul still resides in Fullerton with his wife Mary, their daughter Marley, their dog Poppy and April their cat. Their son Colin is currently studying history at UCLA.

Kramer Testimonials

"The theme from the Kramer USA (National Sales Meeting) last week was about creating "New Beginnings" for the company and I personally think they're off to a great start. They've got a beautiful new office, several exciting new products and renewed enthusiasm for the future. But best of all? They still care about both the personal and professional relationships that made it all possible."

– Jay Myers, CEO of Interactive Solutions, Inc. (ISI)

"I have NEVER wasted my time with a Kramer training session, webinar or in person. Wish I could say that about all my training."

– Jerry Stuckle, President of SmarTech Homes, Inc.

"All of us at RTS are so appreciative of Kramer's consistent efforts to improve products and develop new systems to meet our needs and those of our clients."

– Joy Caspar, Vice President of Engineering, RTS Unified Communications.

"We recommended Kramer products based on identified court needs, the pricing constraints and the assortment of products available from Kramer that fit the needs of this client. We always take the best product for the system, and in this case, Kramer was the best choice."

– Kevin Sanders, Director of Technical Services at ExhibitOne.

"I entered the speaker contest at Infocomm and ended up winning. First, I want to say thanks. Second, I want to say holy crap. I am beyond impressed. I'm amazed. Crystal clear highs, punchy lows (especially considering how incredibly light they are), and super easy connections. Speech, bluegrass, dubstep, and even metal; all sound perfect. Keep up the good work! And again, Thanks!"

– Travis M Stewart, Columbus State Community College.

"We chose the Kramer routing and switching product because of its performance and reliability. Also, the Kramer seven-year warranty is a huge bonus to my clients. The Kramer product is easy to use and control – each piece of equipment talks to the others, making it seamless and easy to operate."

– Jim Fraser, Commercial/Professional Systems Designer, All Sound Designs.s

SCALING NEW HEIGHTS

HDBASET™ OUTPUT AND UNIQUE CAMPUS EMERGENCY ALERT FEATURE

VP-773

ENJOY THE ADVANCED FEATURES AND MAXIMUM SWITCHING QUALITY OF THE VP-773

EMEA INAVATION AWARDS 2014 TECHNOLOGY WINNER

The VP-773 ProScale™ Digital Presentation Scaler/Switcher from Kramer offers an unparalleled combination of features and benefits. It incorporates new technology advancements, including the ability to select and set an EDID for each input of the unit. This ensures connected displays will send the best signal possible to the VP-773, which will result in simplified connectivity and greater ease-of-use. The VP-773 also includes a unique Emergency Alert feature that will allow any video screen connected to a VP-773 to instantly display an alert message. Important campus wide (educational or corporate) safety messages can be delivered quickly and effectively thanks to a product that is already the heart of each room's AV System.

The VP-773 also has all the other features required for today's demanding professional AV systems. It has superior scaling quality, ultra-fast glitch-free switching, 8 inputs comprised of 4 HDMI, 1 DisplayPort, 2 VGA and 1 CV and 3 simultaneously active outputs, 2 HDMI along with 1 HDBaseT.

The VP-773 family scaling switchers won the 2014 Most InAVative Video Processing Product of The Year Award.

KRAMER

AV AWARDS 13 WINNER MANUFACTURER OF THE YEAR

For further product information:

Web: www.kramerus.com • Toll-Free: 888-275-6311 • E-mail: info@kramerus.com

International customers, visit www.kramerelectronics.com for your local distributor.

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