

VPX Series 1Gbps AVoIP – The Little Things Make the Biggest Difference

Original Manufacturer

Aurora is the original manufacturer and inventor of our AV over IP products. We develop these hardware and software technologies in our New Jersey corporate office location. This is very important as many companies do not make their own hardware. They OEM or ODM products from other companies and put their name brand on it making it look like their technology. This makes it harder for them to support and in many cases expand the product line.

Aurora can adapt quickly and give support with an understanding of the product down to the chip level. It is also what allows us to be a leader in this field. When it comes to AV over IP, Aurora has created many of the technologies you see being adopted by other manufacturers. Transceiver concept, Dante/AES67 over IP with Video, Reversible USB, Decora Transceiver AV over IP wall plates, channel mapping, rapid deployment, 10G PoE, and more, has all been innovated by Aurora Multimedia.

Transceiver

This allows a unit to be configured as an encoder or a decoder. The advantage is less models required, better serviceability, and more functionality. This is especially true with the wall plate models as it can be configured as an encoder for a laptop and as a decoder for an extra display depending on the meeting room's requirement.

Transceivers make it possible to have spare parts for 24/7 operation due to the low SKU and it helps with troubleshooting since a unit can take the place of the source or destination side. Aurora was the first company to innovate AV over IP transceiver technology in 2015 and has been an important part in our philosophy for all our products. Overall, we do not need a lot of variety as we integrate many features in all our products, giving great value and capability to our customers.

Scaling with Seamless Switching

This helps with interoperability between different display resolutions and allows for fast seamless switching. It is the difference between waiting seconds or less than a second with a smooth transition. The faster the switching time the smoother the effect when changing between sources.

Latency

This determines the time it takes from encoding the audio/video to decoding the audio/video to show on the display. The lower the latency the better for a variety of reasons.

1. At live events ideally you want a zero-frame latency so the viewers cannot hear or see the difference with the performer.
2. When using computers, the lower frame rates help when using a mouse, for example to not have trailing. Typically, in conference room applications 1 frame or less is ideal.

Breakaway Routing

For maximum flexibility, it is important to have the ability to route the video, audio, USB, RS-232, and IR independently. This allows for the same audio to be routed everywhere, while there is different video on a variety of displays. Breakaway USB helps with routing cameras to different encoders as needed.

Compression Type

The type of compression can make a big difference in image quality and motion artifacts. Aurora uses Mimix™, a proprietary compression that delivers the best in quality of image and motion. When demonstrating side by side with the original content it will be nearly impossible to tell the difference.

Security

It is germane to make certain an AV over IP device has proper enterprise class security like AES 256, 802.1x, HTTPS, & SSH. Without this, a system will be vulnerable in some environments. It is just as important to make certain no content is left behind when there is a power cycle, which is a typical requirement in military and government applications. The Aurora units can even lock out the front buttons, display, and OSD information.

Audio (Analog & Dante/AES67)

Handling audio requires flexibility when accommodating a variety of system designs. Analog audio is still used in many systems and having a line in/out is important. Just as important is the ability to downmix Surround PCM audio to 2 channel stereo and even allow the analog output to be selectable to mono to save on cable costs.

For Dante/AES67, Aurora is the first company to allow an ASIC video CODEC to run a software license version instead of requiring additional semiconductors in hardware. This helps reduce costs, less supply chain issues, and less model varieties required since any of Aurora's VPX devices can be enabled.

To make the use of Dante/AES67 even easier, Aurora integrated in the built-in webpages, a Dante® Routing page so from the same interface, the routes can be made. This makes the initial setup much easier and faster.

Channel Mapping with EPG

This unique feature was created by Aurora to allow a "cable box" experience through AV over IP. Aurora allows you to use a comma delimited spreadsheet (.csv) to enter encoder host names, channel numbers, channel labels, and channel descriptions.

The file is then uploaded into a unit set as a decoder. Now that decoder will be able to use the front up/down buttons and the Aurora remote options (IRC-BT1 Bluetooth, IR-11 IR) to change channels. With the remote or API protocols, you can bring up the EPG (Electronic Programming Guide) which will show the information entered in the .csv file along with a preview window of the channel you are potentially selecting.

Control System Remote

Another exclusive Aurora feature where the IRC-BT1 Bluetooth remote button presses and releases are sent over a network socket connection. This way Aurora or a 3rd party control system can receive the various button presses and react accordingly. For example, pressing and holding the up/down arrows on the remote could be used to control the dimming if the control system has connections into the lighting system.

Auto Sense Switching

Sometimes pressing a button is not convenient and auto sense will look for the last device plugged into the system and switch to that input when this feature is enabled. For our wall plates we give both buttons and

auto sense so when both inputs are used, you can still switch inputs without having to unplug and plug to get a signal back.

Network Connectors and Features

Aurora supplies both RJ-45 and SFP per unit for maximum flexibility and once again, less SKUs. The SFP can be used for single mode, multimode mode, or a second RJ-45.

Aside from typical network features such as IP Address, Subnet, Gateway, & Host Name, the Aurora products allow for NTP, VLAN, and Cable Integrity checking. Aurora uses the NTP for time and date stamp of logs to help diagnose if an issue should occur.

The VLAN helps especially when using Dante® on a single LAN port. Many products need to consume two ports with Dante. The cable integrity test checks the LAN to make certain it is a proper 1G connection.

KVM & USB 2.0 Routing

One of the great things about AV over IP is the scalability and with that KVM and USB routing applications really shine. Aurora handles the basic routing of the keyboard, video, and mouse but we added advanced features like roaming mouse and hotkeys. The roaming mouse allows the switching to a new PC to automatically occur as the mouse reaches an edge of a display towards the next display. The hotkeys are fully programmable with any command so it is not limited to just switching commands but can be used to turn on/off a display for example. The USB 2.0 bandwidth allows 1080p30 cameras to be routed with ease from any decoder to encoder.

Windowing, Videowalls, Custom Images

The VPX series can do up to 8x8 video walls, image rotation for portrait or jigsaw puzzle walls, PiP (Picture in Picture), and Quad windowing. It also allows for custom images to be loaded into units set as decoders so when there is no signal a company logo for example can show up. Some of these features other companies charge additional fees, however, Aurora includes many of these features as a base functionality.

Virtual Comm Ports

Aurora can create a virtual communication port over an IP socket directly to the IR and RS-232 ports. This allows any control system to have direct access without the need for an Aurora Specific macro to control the IR or RS-232. For example, a macro made for a specific brand display's RS-232 port can be directed to our IP Address Port for RS-232 without any modification.

Advanced Capabilities

Many companies just focus on the audio and video delivery but there is more to AV over IP. Applications dictate the need and for Aurora we recognize unified communications as one of those needs. That is why we made the VPX-UC1 Ultra. We added a 2.4GHz 8 Core Android processor with a 6TOP NPU and lots of memory. It can run any Android application available on the market like Microsoft 365™, Zoom™, Teams™, and more.

The VPX Ultra even has dual 8K60 outputs for the latest displays, especially the new popular 5K displays. Any stream coming into the VPX Ultra can be sent into the application and even converted to other streaming lower bandwidth standards like H.264 or H.265 and even record. We also integrated our ReAX control system engine into the unit which can automate the room easily.

Digital Signage is another great use as the VPX Ultra can playback video overlaid onto a menu screen, for example, and even schedule when it gets played.

Video Preview

A typical video preview has low resolution and only a few frames per second. Aurora VPX can do 720p30 high definition MJPEG as a secondary preview. This stream can be viewed by 3rd party control interfaces and remote web pages.

Testing & Debugging

It is great when things work well but the reality is when you have a variety of brands trying to be interoperable, there is a possibility for things to occur. Aurora developed advanced functions to deal with these situations to assure a quick result even if it turns out to be Aurora's firmware.

The VPX Series can do full remote diagnostics so we can see everything the processor is doing and use that information to pinpoint what is happening be it locking to a signal, HDCP issues, audio interoperability and more.

Even if remote access cannot be granted the log files can be saved to file and sent to Aurora. We use a built in NTP client to time/date stamp everything and continually log so even if it happened already, we could still diagnose. I am sure many technicians out there can appreciate that.

We even have a test pattern generator built in so even if a source is not available, we can send one of many different patterns and different resolutions over the network. This is very handy when setting up the system. All this and more can be accessed by the built-in web pages or our free windows web server management tool.

Front Display

Aurora uses OLED screens on all box units to assist with support. Information like IP address and status can be viewed making units easily identifiable. We even allow the OLED to be customized as a "label" identifier. Nothing is worse than having labels stuck to a product and possibly falling off not to mention the esthetics.

Control Ports

Audio and video are not the only important elements of an AV over IP solution. The ability to control nearby devices is just as important. Our products typically come by default with RS-232, IR, CEC, and IR Learner.

Mounting

Two rack mounts are offered by Aurora. A 1RU which holds two units and a 5RU which can mount 12 units. To make it simpler, rails attach to the Aurora units and slide in from the front and affix easily into place with thumb screws.

Brands that have connectors on front and back cannot easily mount in a rack so typically they make more SKUs with card cages and a variety of cards which just causes more items to support/inventory.

You also lose redundancy because if the card cage fails, every card fails. Our method assures maximum redundancy while keeping the SKU the same.

Power Consumption

The typical Aurora VPX at 4K60 4:4:4 will draw approximately 8 watts. Lower resolutions will draw less. That means we work on standard PoE and do not require PoE+ or PoE++. Most do not take into consideration how much the system will cost an end user over time from electricity. Many of the FPGA based systems on the market will draw anywhere from 18 watts to 32 watts. On a larger system that can become thousands per year in electric bills. Not good for the environment or the pocket.

Warranty

Aurora provides a 5-year limited warranty. Some companies provide a lower warranty and then charge for additional years or force you to buy their entire eco system to get an additional warranty.

TAA Compliant

Aurora AV over IP products are mostly made in the USA or in a TAA compliant country. In all instances, Aurora owns the intellectual property and is in full control of the process.