Aurora

iPBⁱT™ᴀꜱᴇ

AV Evolution

IPBaseT Frequently Asked Questions

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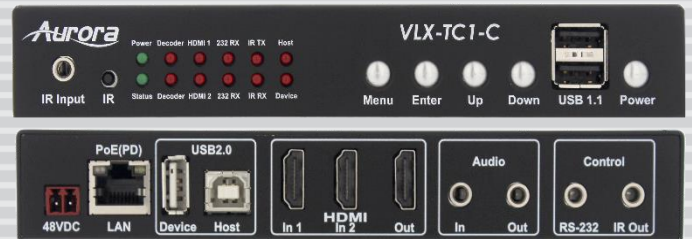
What is IPBaseT?

Aurora's IPBaseT® combines a variety of 4K IP technologies and features under one unified protocol using a simplified topology. Uncompressed video with zero-latency (IPX Series), visually lossless video with low latency (VLX Series), seamless switching, videowall and multi-viewer modes, digital audio, USB 2.0, Ethernet, and control are just some of the core capabilities of IPBaseT®. Utilizing the bandwidth of a standard 1Gbps copper (VLX Series) or 10Gbps copper or fiber (IPX Series), IPBaseT® supports large scalable audio/video matrixing, and it does so while replacing multiple technologies and products with a "single-box" distributed platform. The days of needing a separate AV switcher, control system, videowall processor, audio/DSP converter, and more are   in the past!

Questions & Answers

Below are some common asked questions and answers for the IPX and VLX Series. Latest updates to this document can be found at www.auroramm.com

IPX Series 10G Zero Compression Zero Frame Latency

1. Q. How much bandwidth does IPX Series utilize?
   A. 6.8Gbps 4K 30Hz Video. 9Gbps for 4K2K with 1Gbps Ethernet, 480Mbps USB 2.0, RS-232, and IR
2. Q. What type of Ethernet switch is required for the IPX Series?
   A. 10GbE (SFP+ Fiber or RJ-45 Copper) Layer 2 Non-Blocking Ethernet Switch with IGMP snooping capabilities and fast-leave. Layer 3 is preferred for more control. Refer to IPX model to determine if it is SFP+ fiber or 10G RJ-45 copper.
3. Q. What is the compression?
   A. IPX at its base level has no compression. As IPX products evolve there will be options available to convert the uncompressed IP signal into compressed signals when applicable. For example, recording uncompressed data is a lot of bandwidth so bridging to H.264 or H.265 allows for highly compressed storage
4. Q. What is the latency?
   A. IPX has zero frame latency and has no more than 2 horizontal lines of transmission latency. Depending on horizontal timing it could be less than 30usec for example.
5. Q. What is the distance I can send 4K2K with 10G fiber and copper?
   A. Multi-mode fiber can go 300 meters with OM3 and 400 meters with OM4. Single Mode fiber can really go far at 10km. CAT 6 will travel 55 meters and CAT 6A will travel 100 meters.
6. Q. Does IPX require an AVB Ethernet switch?
   A. No. IPX is designed to work with standard layer 2 or 3 switches.
7. Q. Does IPX require 1588 time base?
   A. No. IPX will generate its own time base but if 1588 is present it can be utilized as well.
8. Q. Do we need to control the Ethernet switch to route the signals?
   A. We do not use the Ethernet switch to control the routing as it is overly complicated and relies too much on specific brand switches and their capabilities. IPBaseT® protocol is Layer 2 so it is fully route-able and is controlled from the transceivers.
9. Q. What is the difference between AVB and IPX Series?
   A. AVB is Layer 2 only so it is not route-able so it is not usable for larger installs. AVB is not ready yet for the "V" part of it. AVBTP subtype field currently only supports

IEC61883 (too prohibitive for all possible formats in HDMI 2.0). AVB is also just a transport Layer. It does not define provisions for HDCP, IR, RS-232, Audio Extraction/Insertion, network management, videowall functions, and much more.

10. Q. How is Dante used in the IPX Series?

A. Dante is an IP audio standard by Audinate with over 200 peripherals utilizing their technology. IPBaseT® takes audio and feeds it into the Dante network. This allows for audio de-embedding and staying 100% digital. Any Dante device on the network can receive the audio signal and process accordingly based on its functionality.

11. Q. Is Dante required for IPX audio?

A. Dante is not required as the IPX has its own audio delivery mechanism that can even break-away. To minimize costs Dante can be a great way to feed only the audio over low bandwidth networks for audio distribution, live audio feeds, bleed over rooms, mixing, amplifying, and more as it only requires a 10/100 network. Ultimately the application will determine the need which is a main part of IPBaseT® philosophy to utilize the strengths of various technologies.

12. Q. Can the USB KVM?

A. Yes. Using ExtremeUSB™ the IPX can route any host PC to any device at full USB 2.0 480Mbps.

13. Q. What is the largest Matrix using IPX Series?

A. If using HDCP up to 128 outputs relative to an input per HDCP guidelines. If not utilizing HDCP then as large as you can make the network. There are Ethernet switches available that can do up to 1000 ports. Unlike a typical card cage it is not input vs. output but a port can be an IN or an OUT. In the case of a 1000 port switch it could be 500 x 500 or 100 x 900, etc.

14. Q. What products are available using 10G IPBaseT® products?

A. The IPX-TC1 which is the world's first transceiver. Unlike other technologies that require a specific RX and TX unit the IPX-TC1 can be configured to be either or thus making inventory and troubleshooting even easier. The IPX-TCW3 is a 3 gang wall plate version of the IPX-TC1 having 2 HDMI inputs and an HDMI output.

15. Q. What is the maximum resolution?

A. 4K2K 4:2:0 60Hz (340MHz)

16. Q. What speed is the Ethernet pass-through?

A. 10/100/1000Mbps

17. Q. Can I use IPX Series for a single point to point connections without a switch?

A. Yes.

18. Q. What PoE type does the IPX utilize?

A. POE+ 802.3at

19. Q. What is the best CAT cable to use for the copper version?

    A. Unshielded CAT cable is recommended for optimal results. CAT 6A 328ft (100 meters), CAT 6 180ft (55 meters). In hostile environment where cables are bundled or there is excess electrical noise, Cat 6 cable limitation may be 108ft (33 meters). The cables must not be kinked or bent too tightly (the bend radius should be at least four times the outer diameter of the cable.)

VLX Series 1G Visually Lossless Low Latency

1. Q. How much bandwidth does VLX Series utilize?
   A. 233Mbps average 4K 30Hz 4:4:4 video. This does not include up to 480Mbps USB 2.0 utilization.
2. Q. What type of Ethernet switch is required for VLX Series?
   A. 1GbE Layer 2 Non-Blocking Ethernet Switch with IGMP snooping capabilities, fast-leave, and Jumbo Packet of 8K+.
3. Q. What is the compression?
   A. Dynamic wavelet based 8:1 compression. As IPBaseT® products evolve there will be options available to convert the IP signal into highly compressed signals when applicable. For example, recording uncompressed data is a lot of bandwidth so bridging to H.264 or H.265 allows for highly compressed storage.
4. Q. What is the latency?
   A. VLX has 25ms (1.5 frame) latency.
5. Q. What is the distance I can send 4K with copper?
   A. CAT 5e/6/6a will travel 100 meters (330ft).
6. Q. Does the VLX Series require an AVB Ethernet switch?
   A. No.
7. Q. Does the VLX Series require 1588 time base?
   A. No.
8. Q. Do we need to control the Ethernet switch to route the signals?
   A. We do not use the Ethernet switch to control the routing as it is overly complicated and relies too much on specific brand switches and their capabilities. IPBaseT® protocol is Layer 2 so it is fully route-able and is controlled from the transceivers.
9. Q. What is the difference between AVB and VLX Series?
   A. AVB is Layer 2 only so it is not route-able so it is not usable for larger installs. AVB is not ready yet for the "V" part of it. AVBTP subtype field currently only supports IEC61883 (too prohibitive for all possible formats in HDMI 2.0). AVB is also just a transport Layer. It does not define provisions for HDCP, IR, RS-232, Audio Extraction/Insertion, network management, videowall functions, and much more.
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A. Dante is not required as the VLX has its own audio delivery mechanism. To minimize costs Dante can be a great way to feed only the audio over low bandwidth networks for audio distribution, live audio feeds, bleed over rooms, mixing, amplifying, and more as it only requires a 10/100 network. Ultimately the application will determine the need which is a main part of IPBaseT® philosophy to utilize the strengths of various technologies.

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A. If using HDCP up to 128 outputs relative to an input per HDCP guidelines. If not utilizing HDCP then as large as you can make the network. There are Ethernet switches available that can do up to 1000 ports. Unlike a typical card cage it is not input vs. output but a port can be an IN or an OUT. In the case of a 1000 port switch it could be 500 x 500 or 100 x 900, etc.

14. Q. What products are available using 1G IPBaseT® products?

A. The VLX-TC1-C transceiver box version, VLX-TCW2V-C transceiver wall plate with VGA/HDMI inputs, and VLX-TCW2H-C transceiver wall plate with dual HDMI inputs.

15. Q. What is the maximum resolution?

A. 4K2K 4:2:0 60Hz/4K2K 4:4:4 30Hz (340MHz)

16. Q. What speed is the Ethernet pass-through on the wall plate?

A. 10/100Mbps

17. Q. Can I use VLX Series for a single point to point connections without a switch?

A. Yes.

18. Q. What PoE type does the VLX utilize?

A. POE+ 802.3af

19. Q. What is the best CAT cable to use for the copper version?

A. CAT 5e/6/6a cable is recommended for optimal results up to 100m (330ft). Note, if trying to future proof, take into consideration the distance required for 10G relative to the CAT cable type.

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