Quantum Ultra II

ULTRA-HIGH BANDWIDTH 8K VIDEOWALL PROCESSORS

VECTOR 4K SCALING

HYPERLANE 500 Gbps

EVERLAST POWER SUPPLIES

18 Gbps 4K/60 4:4:4

JITC CERTIFIED

Videowall Processing Leaps Forward with Advanced Connectivity and 8K Throughput

- Scalable 4K/60 videowall processing for display systems of any size
- Modular architecture accommodates a variety of input and output arrangements
- Supports multi-path 8K/60 signals
- HyperLane® video bus delivers unparalleled real-time performance with throughput up to 500 Gbps
- Switches embedded audio to multiple canvases
- Manage multiple videowalls with varying resolutions and screen arrangements from a single processor

Extron

Quantum Ultra II

Quantum Ultra II represents the next generation of Extron videowall processors, providing advanced, future-ready connectivity and throughput capabilities. The expanded HyperLane video bus delivers unmatched real-time performance with a throughput of up to 500 Gbps. The HDMI 4K PLUS and FOX3 fiber input and output cards have 18 Gbps connections that support resolutions up to 4K/60 at 4:4:4 with full HDCP 2.3 compliance. Embedded audio from any source can be routed independently to each active canvas when using the HDMI 4K PLUS or FOX3 cards. Features such as portrait output support and custom output resolutions ensure compatibility with nearly any display. RS-232, USB, and Ethernet interfaces provide direct connections for control systems.

18 Gbps
4K/60 4:4:4

Quantum HDMI 4K PLUS and FOX3 input and output cards offer the convenience of managing 4K/60 video as a single signal or 8K/60 as a quad-path signal. With four connections per card, each greatly increases the I/O count per chassis when working with 4K/60 sources and displays.

HYPERLANE
500 Gbps

The Quantum Ultra II processor's dedicated high-speed video bus delivers real-time performance unattainable by other videowall processors. The HyperLane video bus maximum throughput is now 500 Gbps, providing the capacity to simultaneously carry more than twenty 4K/60 4:4:4 sources.

JITC
CERTIFIED

Quantum Ultra II is certified by the Joint Interoperability Test Command – JITC for use in government installations. Inclusion on the DoDIN APL validates that Quantum Ultra II has successfully completed interoperability and information assurance testing for use in command and control, conference, training, and briefing room systems.

Extron
Quantum
Ultra
CERTIFIED

Extron is working closely with industry-leading display manufacturers to guarantee consistent, stable presentation of source content when using professional displays with Quantum Ultra II, Quantum Ultra, and Quantum Ultra Connect 4K Videowall Processors. Displays that pass an extensive testing program are identified as Quantum Ultra Certified. This program eliminates compatibility concerns. System designers can take comfort in knowing that the products have been tested together using established parameters, such as image acquisition, image stability, and EDID management. Specifying Quantum Ultra Certified displays streamlines videowall integration by reducing the need for on-site troubleshooting. For more information and a list of certified displays, visit www.extron.com/QUCertified.

Card Frames

Quantum Ultra II 610

The Quantum Ultra II 610 card frame can be populated with any combination of up to ten input and output cards to match source and display requirements. Multiple card frames can be configured and operated as a single system to accommodate any size videowall.

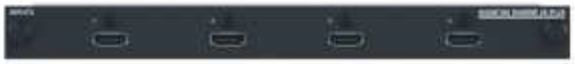
- 6U, 10-slot Card Frame
- HyperLane video bus delivers unparalleled real-time performance with throughput up to 500 Gbps
- Dual-redundant, hot swappable Extron-engineered Everlast power supplies for 24/7, mission-critical environments
- Two AC power inputs
- Solid-state, write-protected operating system drive
- Secondary solid-state drive for image storage and project data
- Simultaneous management of multiple output resolutions and screen arrangements from a single processor

Quantum Ultra II 305

The Quantum Ultra II 305 supports any combination of up to five input and output cards. It features a single solid-state storage drive with an embedded, write-protected operating system for fast boot times and reliable performance. The Quantum Ultra II 305 is a powerful yet cost-effective solution for small to medium-sized videowalls.

- 3U, 5-slot card frame
- HyperLane video bus delivers unparalleled real-time performance with throughput up to 500 Gbps
- Single solid-state storage drive with write-protected operating system
- Internal Extron Everlast power supply
- RS-232, USB, and Ethernet interfaces provide direct connections for SIS control
- Simultaneous management of multiple display resolutions and screen arrangements from a single processor

Quantum Ultra II Input Cards



Quantum IN4HDMI 4K PLUS

The Quantum IN4HDMI 4K PLUS input card supports up to four 4K/60 HDMI video and embedded audio signals. LPCM stereo as well as LPCM, Dolby®, and DTS® multi-channel surround sound formats are supported and passed through to the OUT4HDMI 4K PLUS or OUT4FOX3 cards.

- Accepts up to four simultaneous 4K/60 HDMI and embedded audio signals per card
- Supports video resolutions from 480i to 4K/60
- Supports multi-path 8K/60 signals
- Embedded audio pass through
- Advanced 4:4:4 signal processing
- Source rotation

Quantum IN4FOX3

Each of the Quantum IN4FOX3 fiber input cards accept four signals up to 4K/60 from FOX3 transmitters or from a FOX3 matrix switcher. Embedded audio can be routed from any input to each active canvas. Four models provide complete flexibility when integrating a Quantum Ultra II processor into a secure fiber ecosystem.

- Compatible with FOX3 matrix switching, switching, and extension products
- Supports 4K/60 signals on a single channel
- Supports both lossless and uncompressed signal formats
- Embedded audio support

Quantum Ultra II Output Cards

Quantum OUT4HDMI 4K PLUS

The Quantum OUT4HDMI 4K PLUS has four outputs and supports resolutions from 1024x768 to 4K/60 and embedded audio. Selected source audio is embedded onto the HDMI output signal.

- Outputs up to four simultaneous 4K/60 HDMI signals plus embedded audio
- Supports video resolutions from 1024x768 to 4K/60
- One embedded audio pass through per canvas
- 4:4:4 signal processing
- Supports portrait and landscape displays

Quantum OUT4FOX3

Each of the Quantum OUT4FOX3 fiber output cards delivers up to four 4K/60 signals to FOX3 receivers or a FOX3 matrix switcher. Embedded audio can be routed to any canvas. Four models provide complete flexibility when integrating a Quantum Ultra II processor into a secure fiber ecosystem.

- Compatible with FOX3 matrix switching, switching, and extension products
- Supports 4K/60 signals on a single channel
- Supports both lossless and uncompressed signal formats
- Embedded audio support

Expansion Cards

Quantum Expansion IN

Quantum Expansion OUT

Quantum Expansion IN and Quantum Expansion OUT cards link multiple Quantum Ultra videowall processors together, simplifying the design, integration, and operation of large videowalls. The expansion cards extend the high-speed HyperLane® bus between the processors, creating a common, shared bus. This makes all input sources available to all video outputs, eliminating the need for front-end switching. Up to five processors can be linked using four pairs of expansion cards.

- Links multiple Quantum Ultra processors together to create a single large system
- Create videowalls with up to five processors and 168 total inputs/outputs
- Uncompressed fiber data link between expansion cards retains critical image quality
- Outputs are genlocked across each Quantum Ultra processor

Quantum Ultra Card Compatibility

Quantum Ultra II 610 and Quantum Ultra II 305 videowall processors are fully compatible with cards created for Quantum Ultra 610 and Quantum Ultra 305 processors. This facilitates access to hardware-based IP decoding and transmission over DTP. These cards also provide cost-effective options for HDMI input and output. When combined in a processor frame with the high-bandwidth HDMI 4K PLUS and FOX3 fiber cards engineered for Quantum Ultra II models, reliance on external peripherals is reduced. This flexibility streamlines integration and increases system reliability.

Quantum Ultra Input Cards

Quantum IN4HDMI

The Quantum IN4HDMI input card supports up to four 2K inputs, two 4K/30 inputs, or a single 4K/60 input. It quickly and precisely acquires standard source formats, as well as unique signal types common in military or medical environments.

- Up to four simultaneous HDMI inputs
- Supports video resolutions from 480i to 4K/60
- Accepts 4K signals on one, two, or four connections
- Advanced 4:4:4 signal processing
- Source rotation
- Aspect ratio control

Quantum IN SMD 100

The Quantum IN SMD 100 streaming decoder card accepts up to four 1080p/60, eight 1080p/30, or 16 SD resolution streams and is compatible with MPEG-2, Motion JPEG, and H.264 streams at bit rates up to 40 Mbps. It supports the video sections of ONVIF Profile S, making it compatible with a wide variety of H.264 encoders and IP cameras.

- Hardware decoding of H.264 streams
- Adherence to ONVIF Profile-S video specification
- Decodes a wide range of resolutions up to 1080p/60
- Supports a wide range of streaming transport protocols

Quantum Ultra Output Cards

Quantum OUT4HDMI

The Quantum OUT4HDMI has four HDMI outputs and supports resolutions from 1024x768 to 4K/60. Output rotation, output overlap, mullion compensation, and custom output resolutions provide compatibility with nearly any display device.

- Quad-Channel mode supports four signals up to 2K/60
- Dual-Channel mode supports two single path 4K/30 signals
- Single channel mode supports 4K/60 as dual or quad-path
- 4:4:4 signal processing
- Supports portrait and landscape displays

Quantum OUT4DTP

The Quantum OUT4DTP shares the same features as the OUT4HDMI, and offers four DTP outputs that can send signals up to 330 feet (100 meters) over shielded CATx cable.

- Selectable DTP, XTP, and HDBaseT output modes
- Power insertion enables remote powering of DTP receivers
- Bidirectional RS-232 and IR insertion for AV device control
- RS-232 insertion from Quantum Ultra Ethernet control port
- Supports portrait and landscape displays

HyperLane Video Bus

Quantum Ultra II features a high-speed video bus that incorporates Extron HyperLane™ technology, which delivers real-time performance unattainable by other videowall processors.

The HyperLane bus serves one purpose - transporting video and audio data between input and output cards. The dedicated nature of the bus means performance is completely consistent, predictable, and unaffected by any other element of the system. This provides smooth presentation of sources, with no variance in the frame rate of the displayed source layout.

The 8K-ready HyperLane video bus has a maximum throughput of 500 Gbps, providing full compatibility with the highest video resolutions currently in use, such as 4K/60 with 4:4:4 color sampling. It has the capacity to simultaneously carry more than twenty 4K/60 4:4:4 sources. It also possesses the bandwidth required to support evolving signal formats, such as 8K, along with the higher resolutions, high dynamic range - HDR, greater color depth, and the expanded color gamut these signals will provide.

Future-ready, 500 Gbps video bus has the capacity to carry more than twenty 4K/60 sources, with support for 8K and other evolving signal formats

HYPERLANE 500 Gbps

Security

Write Protected OS

The Quantum Ultra II operating system is write-protected, preventing any modifications to the file system without administrator password verification. The embedded OS also requires no intrusive updates, ensuring consistent, stable operation.

IP Port Disabling

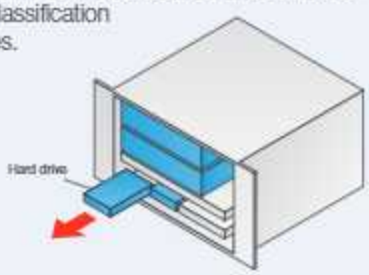
IP and UDP ports can be selectively enabled or disabled, locking out access to Telnet, SSH, or HTTP protocols.

Event Log

A system event log documents software, hardware, and connection-related events on the Quantum Ultra II. It is maintained as a locally-stored file with a user-definable maximum size, and can be downloaded directly from the processor.

Removable Storage Disks

The operating system and data storage drives on the Quantum Ultra II 610 are easily removed from the card frame, accommodating security management policies that mandate specialized storage or classification management procedures.



Encrypted Connection

SSL communication protocol provides an encrypted connection between the Videowall Configuration Software and Quantum Ultra II for system setup and firmware updates.

Secure Shell

SSH communication between external control systems and Quantum Ultra II ensures a secure connection for remote SIS commands.

Signed Firmware

Firmware updates are digitally signed by Extron, ensuring the file originated from Extron and has not been tampered with. All firmware updates require Administrator login, and are transferred across an encrypted connection for additional security.

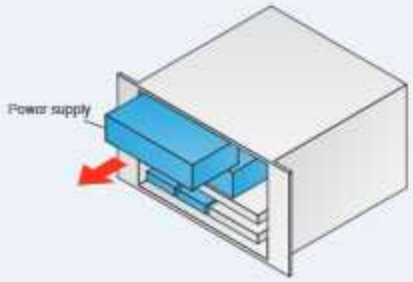
User-definable OS Password

Access to the Quantum Ultra II operating system is protected with a user-definable password, allowing it to conform to an organization's security and scheduling policies.

Robust Operation

Dual Redundant, Hot Swappable Everlast Power Supplies

Quantum Ultra II was engineered for continuous operation in mission-critical environments. Redundant, hot swappable Everlast power supplies — designed and Engineered by Extron — are a standard feature on the Quantum Ultra II 610 card frame and deliver uninterrupted 24/7 performance. The Quantum Ultra II 305 card frame utilizes a single internal Everlast power supply.



Unsolicited Failure Notifications

System administrators can be notified in the event of a critical component failure such as a power supply or fan, or when the recommended operating temperature is exceeded.

Two AC power inputs

For added power reliability, some 24-hour environments require two separate AC power sources, one as the primary source and the second for redundancy. The Quantum Ultra II 610 provides two AC power inputs for continuous connection to both power sources.

Solid State Storage

A solid-state drive provides security and stability for the Quantum Ultra II operating system. Solid state drives are impervious to failure modes common with mechanical drives, such as failed bearings, motors, and read/write heads. An additional benefit of the solid-state drive is fast system startup, taking less than 90 seconds to power up and display video on all configured outputs.

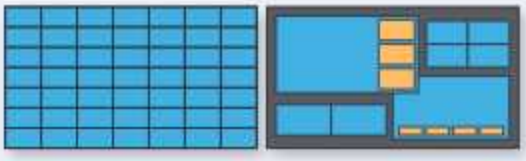
Processing and Control

4:4:4 Signal Processing

Quantum Ultra II processing is always performed in the RGB domain with full 4:4:4 color sampling, which is critical for processing fine image details such as single pixel, colored lines and text in computer content.

Windowing

Quantum Ultra II provides extensive windowing capabilities, with the ability to display up to 64 video, image, and clock windows from each output card. Restriction-free window placement allows side-by-side, overlap, and picture in picture positioning of content.



Source Rotation

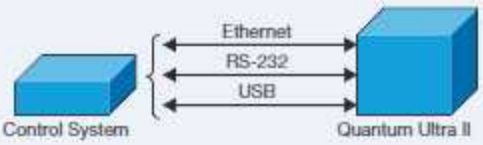
In addition to output rotation, sources can also be rotated in 90-degree increments. This provides flexible and creative presentation options for live content as well as internally stored images.

Internal, Dynamic Test Patterns

Quantum Ultra II offers several internally-generated video test patterns to facilitate proper display device setup. Test patterns are dynamically generated to match the output resolution of the connected displays, allowing pixel-accurate calibration.

Direct, Full-Featured Control

Control systems can connect directly to the Quantum Ultra II using RS-232, USB, and Ethernet. A full-featured control protocol allows access to preset selection, window source selection, window size, position, and visibility, window border appearance, window labeling, and many more presentation options.



Intuitive Control in the Palm of Your Hand

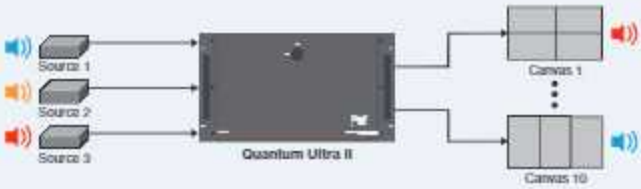
EMS-Quantum Ultra combines the freedom of wireless operation with an easy-to-use application specifically designed for intuitive control. The software is compatible with Apple® iOS®, Google® Android™, and Microsoft® Surface platforms. Familiar finger gestures enable control system functionality and common operational tasks. It can act as the sole point of control or work in conjunction with VCS and a control system. Up to 10 mobile devices can control the Quantum Ultra II system.

Audio Features

Embedded Audio Pass-Through
Quantum Ultra II supports embedded audio switching when configured with HDMI 4K PLUS or FOX3 input and output cards, eliminating the need for external audio management.

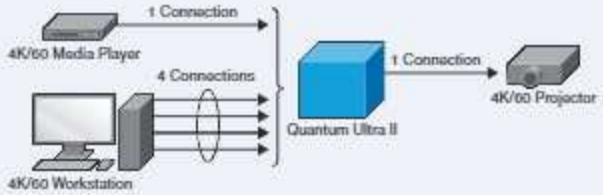
Audio Formats
Supports embedded audio formats, including LPCM stereo as well as multi-channel LPCM, Dolby®, and DTS® surround sound signals.

One Audio Source per Canvas
Select one audio source per canvas from any of the available inputs. Embedded audio is presented on the first output of each canvas. Switched audio can be de-embedded using an Extron HAE 100 4K Plus HDMI audio extractor or select FOX3 fiber receivers.



Source Features

4K/60 on 1, 2, or 4 Connections
Quantum Ultra II offers the convenience of managing 4K/60 video as a single, dual, or quad-path signal, for flexibility when working with 4K/60 sources, peripherals, and displays.



VNC Sources
Quantum Ultra II can display streamed content sourced from computers running a Virtual Network Computing – VNC server application. Multiple VNC streams can be presented simultaneously on the videowall for collaborative sharing from local or remote computers.

System Clocks and Timers
Internally generated clocks can be presented in a variety of time and date formats, in multiple time zones. Flexible size and color options present clock data clearly and effectively, and clock time can be synchronized to network time protocol – NTP.

Locally-Stored Images
Image file types, including JPEG, PNG, and BMP can be uploaded to the Quantum Ultra II for use as backgrounds or displayed as source windows. Image transparency is supported via Alpha, level, and color keying.

Window Borders and Text
Custom color borders with rounded corners, drop shadows, and transparency can be applied to any window type. Border titles and overlay text can be applied to a window and dynamically updated from the control system to indicate a change in the source's name, type, status, or classification level.

Streaming Video

Hardware Decoding
The Quantum IN SMD 100 input card supports hardware decoding of H.264 streams for presentation on the videowall. This eliminates the need for external decoders, reducing system cost and complexity.

Compatible with Popular Streaming Formats
The IN SMD 100 input card is compatible with a wide variety common industry streaming formats, including H.264, MPEG-2, MPEG-4, and Motion JPEG.

Multi-resolution Decoding
The IN SMD 100 decodes a wide range of streamed resolutions up to 1080p/60. Users can opt to decode more streams at lower resolutions or fewer streams at higher resolutions, allowing efficient use of network and processing bandwidth.

ONVIF Profile S Compliance
The IN SMD 100 input card supports the video sections of ONVIF Profile S, making it compatible with a wide variety of H.264 encoders, IP cameras, media encoders, and other streaming devices. This simplifies component selection when designing a system, and ensures all elements work properly together.

Multiple Network Connections
Two independently-configurable network connections allow decoding resources to be shared within the same subnet or split across multiple subnets. This provides increased flexibility when designing complex streaming networks.

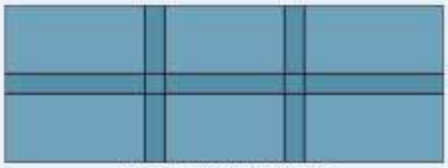
Output Features

Output Rotation
The Quantum Ultra II processor's output signals can be rotated clockwise or counterclockwise in 90-degree increments, accommodating displays arranged in both portrait and landscape orientations.

Multiple Simultaneous Resolutions
1080P, 4K, and other display types can be driven simultaneously at their native resolution from a single Quantum Ultra II processor.

Bezel Compensation
Adjustable horizontal and vertical compensation extends the displayed image "behind" screen bezels, accurately presenting sources which span multiple displays.

Output Overlap
Output overlap provides redundant image data for edge-blended projection applications. Both horizontal and vertical overlaps can be applied simultaneously. Output overlap also simplifies operation with large direct-view LED systems, and other specialized displays.



Horizontal and Vertical Overlap

Custom Output Resolutions
Quantum Ultra II supports custom output resolutions, maximizing compatibility with LED systems, evolving display technology, and non-standard displays. This also eliminates the need for the display to perform internal scaling, increasing the quality of displayed content.

Multiple Wall Control
A single Quantum Ultra II processor can simultaneously drive multiple videowalls, and additional card frames can be added for very large systems. Up to 10 videowalls can be independently controlled, each with varying screen orientation, overlap, mullion compensation, and output resolutions.

Fiber Extension

Simplified Integration
FOX3 input and output options simplify videowall integration into systems with a fiber architecture by eliminating the need for additional fiber receivers or transmitters.

Supports both lossless and uncompressed signal formats
Each Quantum FOX3 series card extends either lossless or uncompressed signals. Extron's patented wavelet-based compression technology is lossless, delivering high image quality with very low latency at highly efficient bit rates. An uncompressed signal format provides the highest quality video distribution system.

Multimode and Singlemode Extension
Cards with MM in the model name support multimode transmissions at 850 nm, which is typically used within buildings or facilities with moderate-range transmission distances. Cards designated as SM support singlemode at 1310 nm, offering long-range transmission capability over extreme distances.

Twisted Pair Extension

DTP Output
The Quantum OUT4DTP output card extends signals up to 330 feet (100 meters) across shielded CATx cable when paired with the appropriate DTP receiver. This eliminates need for DTP transmitters when displays are not local to the Quantum Ultra II processor.

Selectable Twisted-pair Output Mode
Selectable DTP, XTP, and HDBaseT twisted pair output modes allows selection of the type of twisted pair technology best suited for the application. This provides system design flexibility and compatibility with the widest number of solutions.

DTP SYSTEMS XTP SYSTEMS HDBaseT COMPATIBLE

Power Insertion
Power insertion on the Quantum OUT4DTP enables remote powering of DTP receivers, simplifying integration and reducing space and power requirements at the display.

OVERVIEW – QUANTUM ULTRA II 610

500 Gbps HyperLane high-speed video bus
Delivers unequalled real-time performance for resolutions up to 8K, easily accommodating the high-bandwidth demands of large videowalls displaying many simultaneous HD and 4K sources.

Dual hot-swappable, redundant Everlast power supplies
Durable Extron-engineered power supplies maximize system uptime.

Output overlap, bezel compensation, custom output formats, and image rotation features support nearly every display type

Supports multiple videowalls from a single processor with varying screen orientation and resolution

6U, 10-slot card frame
Supports videowalls up to 36 screens in size. Additional processors can be configured and operated as a single system to accommodate larger videowalls.

Front panel LEDs
Indicate fan and power supply status.

Removable operating system and data storage drives
Accommodate security management procedures requiring data separation for varying security classifications.

Solid-state, write-protected operating system drive
Delivers reliable, long-term operation with fast start-up times.

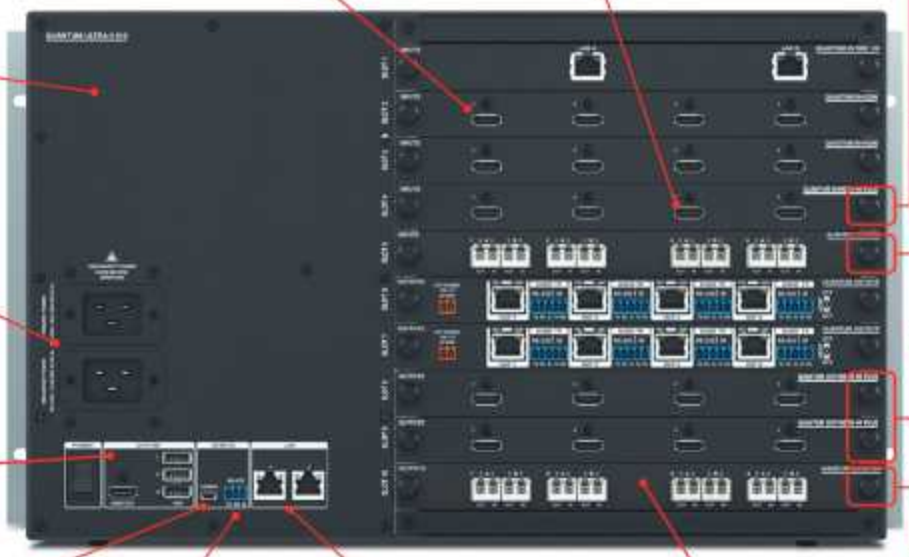
Advanced 4:4:4 signal processing
Maintains color accuracy and fine picture detail.

Compatible with all generations of Quantum Ultra cards

Embedded Audio Switching
Allows selection of one audio source per canvas when using HDMI 4K PLUS and FOX3 cards.

Four-channel, 4K/60 HDMI Input Card
Offers the convenience of managing 4K/60 video as a single signal, increasing the I/O count per chassis when working with 4K/60 sources

Power Save Mode
Provides a low power standby state to conserve energy when not in use.



Four-channel, 4K/60 FOX3 Fiber Input Cards
Quantum IN4FOX3 cards accept four signals up to 4K/60 from FOX3 transmitters or from a FOX3 matrix switcher.

Dual power connections
Provide separate power to each of the two power supplies.

Four-channel, 4K/60 HDMI Output Card
Portrait and landscape output options at 4K/60 or custom output resolutions provides complete flexibility when working with displays.

System connections
Allow access to the embedded operating system and facilitate loading of picture files.

Four-channel, 4K/60 FOX3 Fiber Output Cards
Quantum OUT4FOX3 fiber output cards deliver up to four 4K/60 signals to FOX3 receivers or a FOX3 matrix switcher. Embedded audio can be routed to any canvas.

USB configuration port
Provides convenient user access for system configuration and monitoring.

RS-232 Port
Provides easy access for direct system control and monitoring.

Ethernet port
Provides direct access for system configuration, monitoring and control.

Support for custom output resolutions
Maximizes compatibility with evolving display technology, non-standard displays, and LED systems.

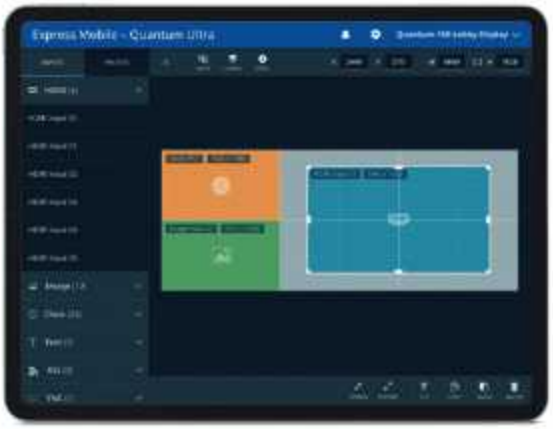
VCS

VCS features an intuitive interface, task-oriented workflow, and advanced configuration functionality. It gives you the power and flexibility required to get Quantum Ultra II up and running fast, without sacrificing ease of use. Window presets are created by dragging and dropping sources onto a virtual representation of the videowall. Familiar editing controls streamline layering, aligning, and sizing of source windows. Live and Preview modes provide the option for immediate or controlled wall response to edits. Whether managing a few windows on one or two displays, or hundreds of windows across a multitude of displays, VCS provides an efficient solution for configuring and controlling Quantum Ultra II.

- Efficient configuration for videowalls of any size and complexity
- Supports devices with Ethernet connectivity
- Configure systems while online or offline
- Stores all configuration and preset parameters locally on the videowall processor
- Separate User, Administrator, and Designer credentials define operational roles
- Undo/Redo edits to wall presets
- Create custom output resolutions based on connected display EDID
- Localized language display in window titles, plus Text and RSS windows
- System Overview Report
- Status indicators give users visual confirmation of processor connection

EMS-Quantum Ultra

EMS-Quantum Ultra combines the freedom of wireless control with an intuitive, easy to use application. It is compatible with Apple® iOS®, Google® Android™, and Microsoft® Surface platforms. Familiar finger gestures facilitate preset selection, window size and position, source selection, and other common operational tasks. It can act as the sole point of control or work in conjunction with VCS and a control system, such as an Extron IP Link® Pro control processor and a TouchLink® Pro touchpanel. Up to 10 mobile devices can control the Quantum Ultra II system.



App Store Google Play Microsoft

- Provides simple user control of Extron Quantum Ultra and Quantum Ultra II videowall processors from a mobile device
- Simplifies common operational tasks, such as preset selection, window management, and source switching
- Separate access credentials for Users, Designers, and Administrators
- Requires videowall processor with LinkLicense® for EMS-Quantum Ultra
- Easily preview presets prior to recalling
- Precise, pixel perfect editing of window size and position
- Create, save, and recall up to 128 window presets
- Multi-level Undo function
- Alerts notify users of temperature warnings, along with power supply and fan failures

VCS FEATURES

Connection task
Allows connection to online processors, or manual definition of processors for offline editing.

Canvas Tabs
Allow access to up to 10 canvases, or independent videowalls, controlled from a single instance of VCS.

Wall Configuration task
For creating one or more screen arrays and assigning processor outputs to screens.

Source Configuration task
For configuring system inputs and virtual source types such as images or clocks.

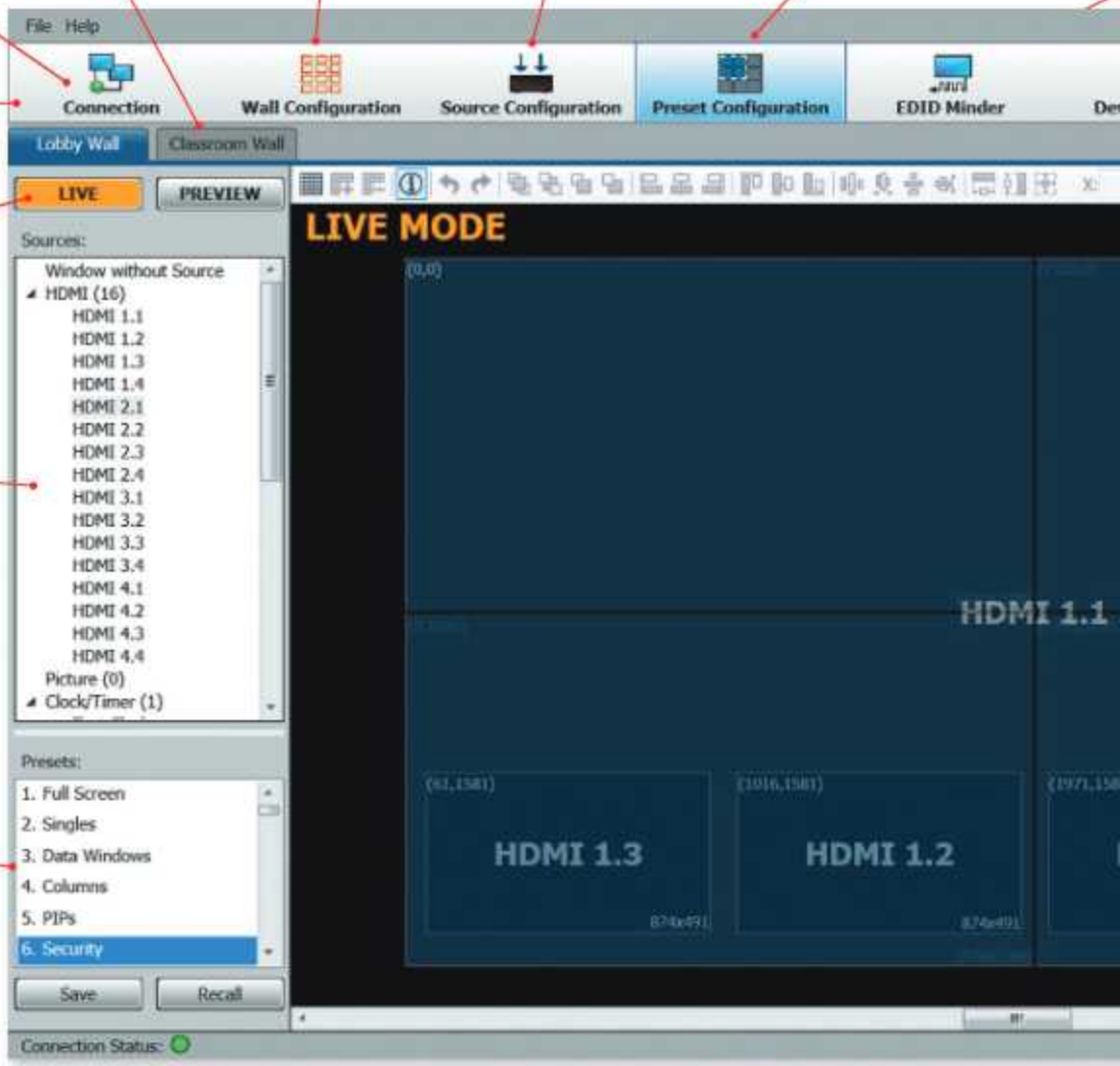
Preset Configuration task
For creating and recalling window presets as well as live edits.

Task-Oriented workflow
Simplifies integration by compartmentalizing each step of the configuration process.

Live/Preview mode
Allows edits to occur immediately on the videowall, or queued until a "Take" is performed.

Source List
Allows drag-and-drop placement of defined sources onto the virtual videowall area.

Presets Region
Allows management of up to 128 window presets per canvas



Snap Grid Management
Allows adjustment of snap grid density, and the ability to enable and disable the grid.

Horizontal Window Alignment
Allows windows to be left aligned, right aligned, or centered horizontally in relation to one another

Window Distribution
Allows windows to be distributed horizontally or vertically in relation to one another, or butted next to one another.

Undo/Redo
Allows edits to be undone and reapplied

Layer Control
Sets the layer of the selected window or group of windows

Vertical Window Alignment
Allows windows to be top aligned, bottom aligned, or centered vertically in relation to one another

Window Size
Adjusts selected windows to the same height, width or both in relation to the first selected window.

EDID Minder task
Facilitates EDID management and configuration of custom output modes.

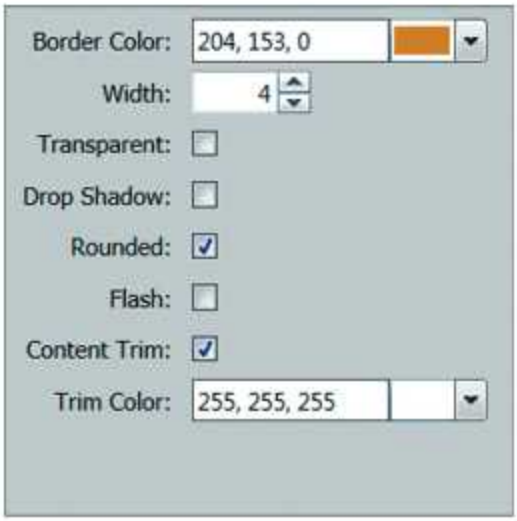
Device Settings task
Displays processor status and facilitates communication setup and firmware upgrades.

Discrete Size and Position Controls
Allows precise adjustment of window size and position, in single-pixel increments.

Familiar user interface
Universally-recognized icons and tools streamline management of source windows.

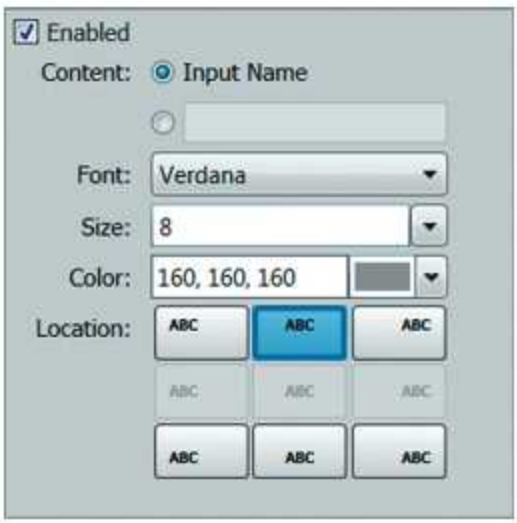
Window Styles

Up to 128 window styles can be created and applied to any source window. VCS simplifies style creation with easy-to-use interfaces for defining border and text properties.



Window Borders

The window border interface provides access to border color, width, transparency, drop shadow, and corner shape options. The Flash option is used to visually draw attention to a source window. Selecting Content Trim will outline the source content within the border, in the color specified by the Trim Color option.



Title Text and Overlay Text

Separate Title Text and Overlay text interfaces are used to define text styles, including font, font size, and font color. Text positions are quickly selected from visual representations of available options.

VECTOR 4K

Extron Vector 4K Scaling Technology

For over 25 years, Extron has been engineering scaling and signal processing solutions that deliver uncompromised image quality and performance. As a result, we have become an industry leader in scaling technology, designing best-in-class products renowned for their quality, reliability, and ease of use. We have continually refined our technology to keep pace with evolving video formats – from standard definition to high definition signals, and now, 4K. Our patented image processing technologies continue to set industry benchmarks for visual performance and efficiency.

Engineered by Extron from the Ground Up

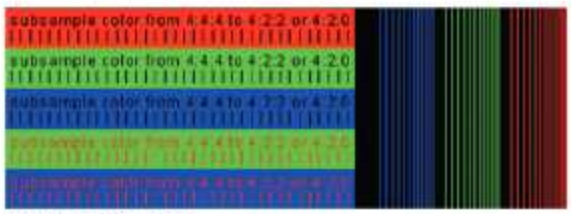
Vector 4K was developed internally by Extron's expert team of signal processing engineers. In-house development and continuous enhancement of this technology enables us to build products to our own exacting standards for image quality as well as operation and performance. Features such as 4:4:4 chroma sampling and bicubic scaling ensure very high image quality and preserve detail present in the original source material. Best in class scaling technology enables the products themselves to be smaller and available in a wider variety of form factors. They also run cooler, managing power more efficiently. The result is the ability to create cost-effective designs with integrated scalers in a wider offering of Extron products.

Patented Scaling Technology for the Most Demanding 4K Applications

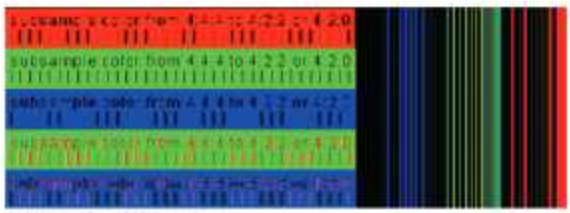
By developing our own scaling technology, we can design to our own exacting specifications and have absolute control over the end product. Our many years of signal processing achievements have resulted in 24 worldwide patents for our scaling engines and video processing algorithms. These patented technologies are part of what makes Extron Vector 4K scaling the new benchmark for 4K video processing.

4:4:4 Chroma Sampling

Vector 4K processing is always performed in the RGB domain with full 4:4:4 color bandwidth, which is critical for processing fine image details. Competing 4K scalers commonly process



4:4:4 Chroma Sampling

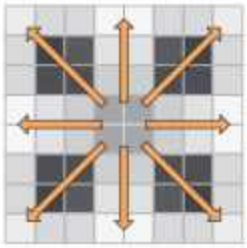


4:2:2 Chroma Subsampling

in the component domain, employing 4:2:2 or 4:2:0 chroma subsampling. This decreases the bandwidth required to process the signal, at the expense of reduced color detail. Chroma subsampling may be acceptable when processing full-motion video content, but with computer-generated content, subsampled color negatively impacts the clarity of the image. Vector 4K 4:4:4 color processing retains the fine color details present in the original source.

Bicubic Interpolation

The Vector 4K scaling engine incorporates Extron-patented, multi-tap, bicubic interpolation, which creates a new pixel by averaging adjacent pixels above, below, to the sides, and diagonally of the new pixel. This produces sharp, accurate output, preserving single-pixel detail that other scaling methods lack. Vector 4K algorithms continually and dynamically adapt, ensuring optimal processing for upscaling, downscaling, or 1:1 pass-through applications.



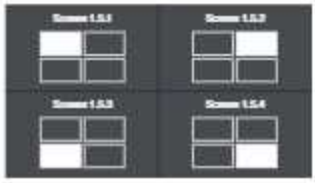
Bicubic Interpolation

Dynamic Digital Input Detection and Auto-Image

Today's computer video standards allow for signal customization to suit the needs of a particular application or display. Such sources can present a challenge for signal processors that rely solely on fixed lookup tables of common resolutions, which are typically incomplete and quickly become obsolete. Vector 4K goes beyond conventional lookup tables, incorporating dynamic input detection which analyzes incoming digital video signals and accurately identifies the signal parameters before processing them for precise conversion and scaling.

Dynamic Internal Test Patterns

Extron Vector 4K scalers and signal processors are equipped with a set of dynamic, mathematically generated, vector-based video test patterns. They aid in configuring displays, and provide test signals to facilitate troubleshooting and expedite system recovery. These patterns are precisely generated based on the scaler's output resolution, and are automatically redrawn if the resolution is changed. This ensures that test patterns exactly match the signal resolution, producing sharp, crisp images, which in turn facilitate precise setup and configuration of display devices. Patterns specific to videowall applications are included, such as Diagonal Crosshatch, Edge Blend Alignment, and Display ID.



EDID MINDER

EDID Management

Vector 4K encompasses a range of advanced signal management technologies common across many of Extron's digital video product solutions, simplifying integration of digital video sources and displays, and ensuring optimal system performance and dependability. EDID Minder® manages EDID communication between devices so that preferred video formats are always correctly and reliably output from the source to the receiving device. Custom EDID can also be captured or uploaded to Extron products for special applications.

Integration Features

Vector 4K technology also provides features that aid in system integration, such as aspect ratio control, auto-memory and user presets, advanced HDCP management, and more.

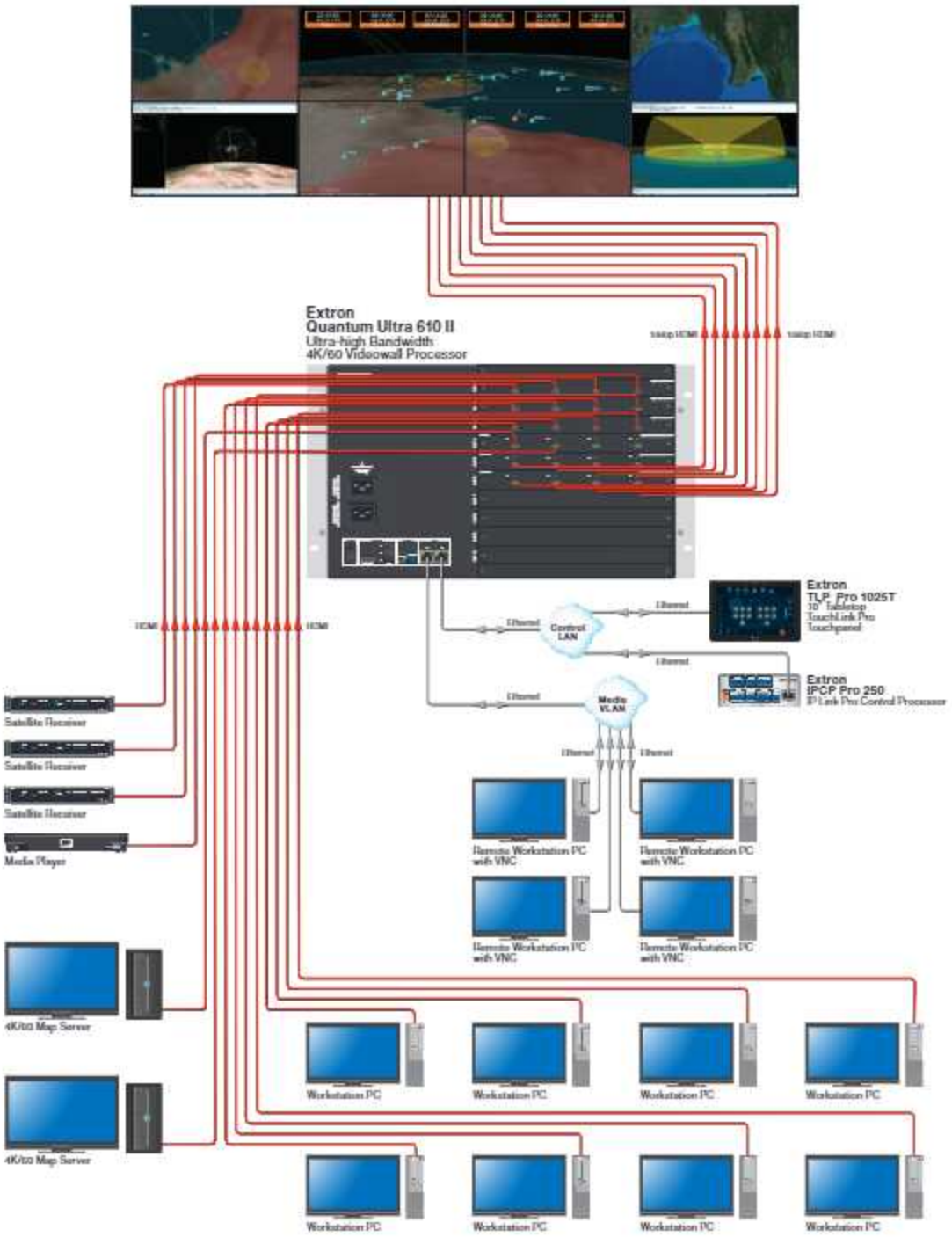
Learn More

To learn more about Vector 4K scaling, visit **www.extron.com/vector4k**, where you can see interactive demonstrations of Vector 4K technology, view an informational video highlighting key features, and download the Vector 4K brochure.

www.extron.com/vector4k

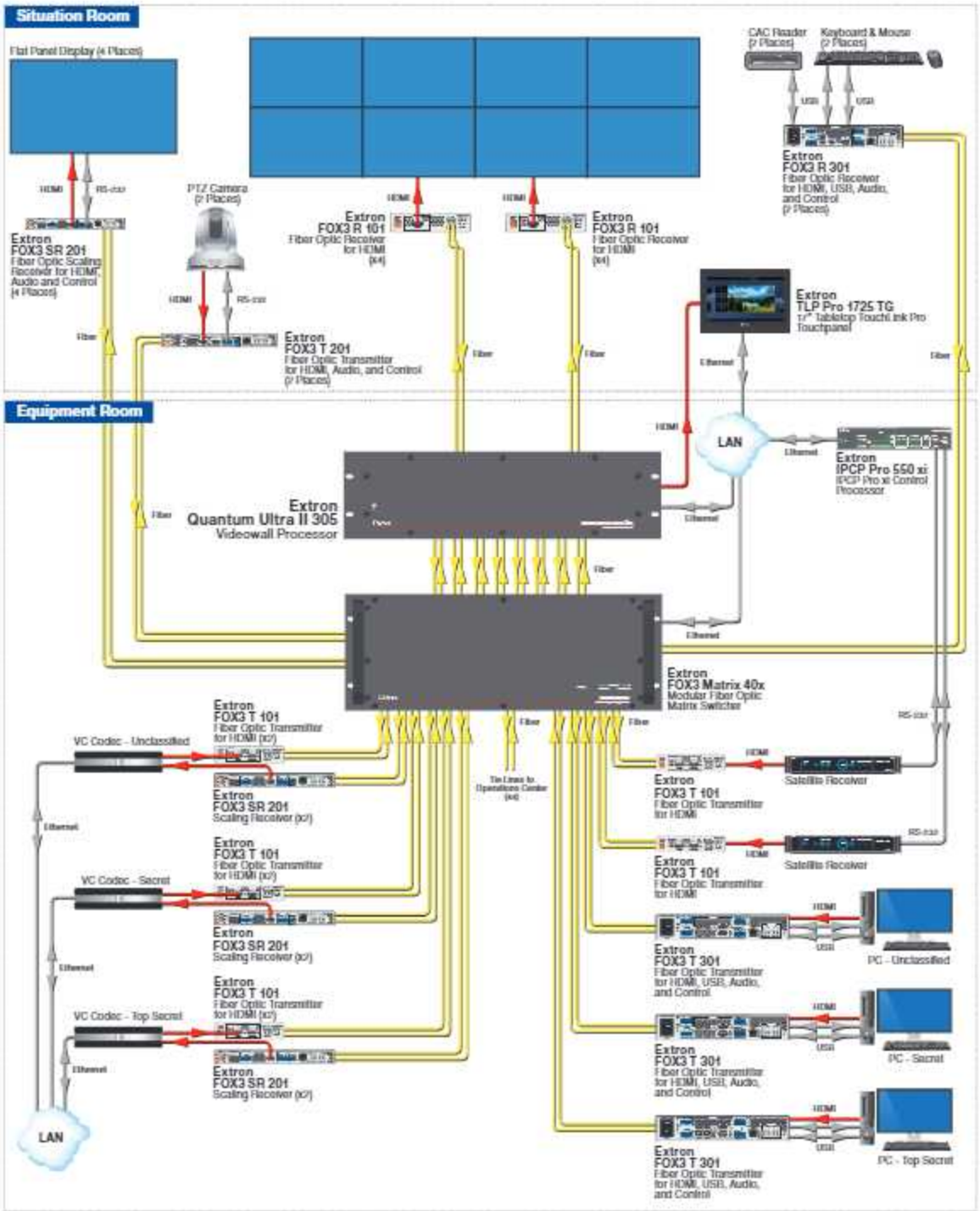
Command Center

A command center utilizes an eight-screen videowall to facilitate information sharing among operation staff. Quantum Ultra II drives eight displays in a 24/7 operational environment. Two 4K/60 workstations deliver high resolution map information that can be displayed pixel-for-pixel on the videowall. Three satellite receivers tuned to news channels provide up to date status of world events, and prerecorded content can be sourced from the system's media player. Eight operator workstations connect directly to a pair of HDMI input cards, while four remote workstations running VNC servers share screen data with Quantum Ultra II via VNC client connections. Time clocks, generated by Quantum Ultra II, are displayed in multiple time zones with colored borders and titles. A TLP Pro 1025T touchpanel allows the shift manager to easily select the content displayed on the videowall, which may vary from a few map sources to more complex layouts containing all available map, workstation, and news content.



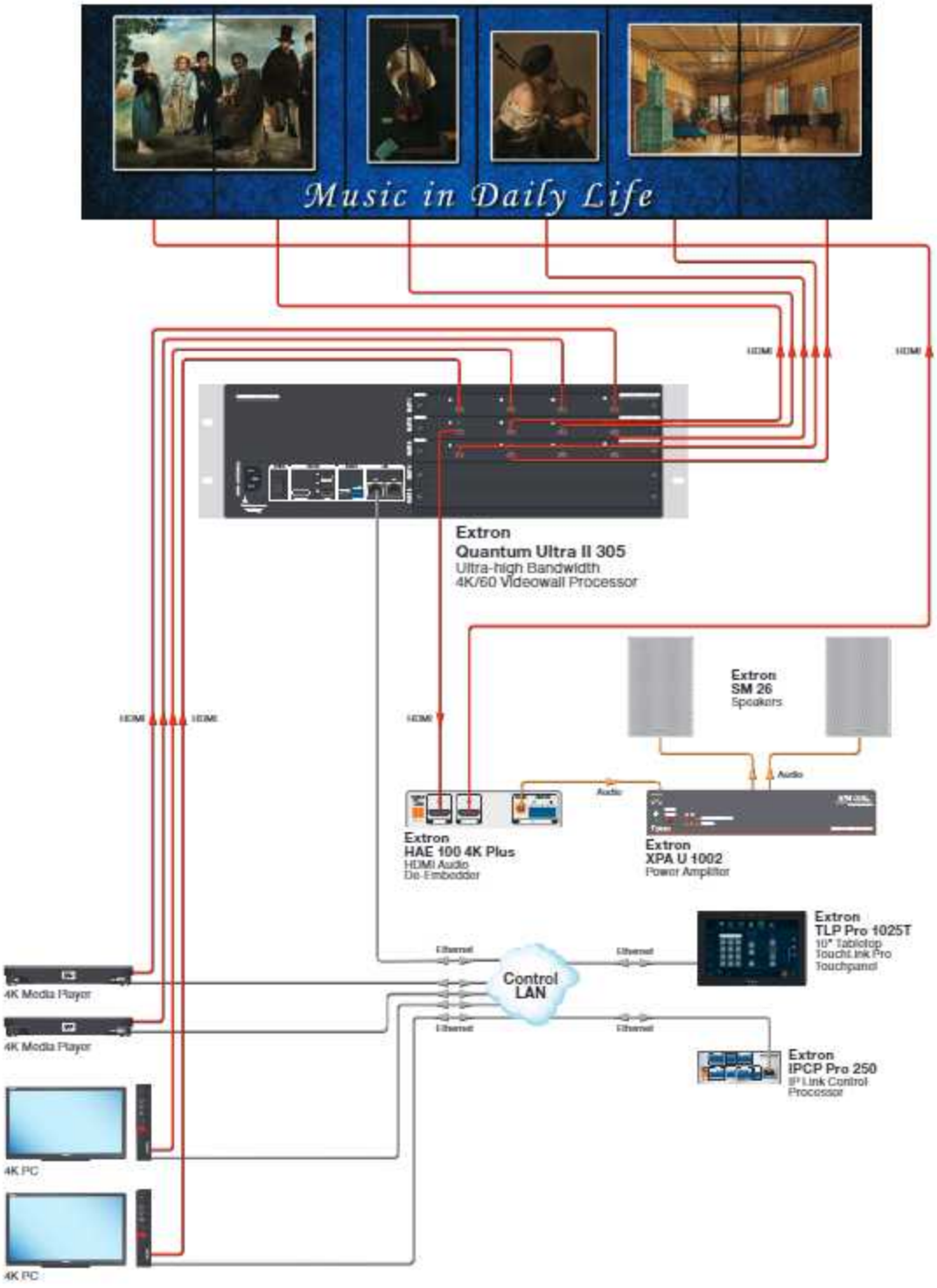
Situation Room

A situation room is used to monitor and manage critical and crisis events. An eight-screen videowall driven by a Quantum Ultra II processor presents videoconference sessions, workstation data, news reports, and other broadcasts sourced from the operations center. A FOX3 Matrix 40x fiber optic switcher manages signal distribution for the entire facility, which incorporates FOX3 T 301 and FOX3 R 301 end-points for keyboard and mouse control of workstations located within the operation center's equipment room. Four auxiliary screens driven by FOX3 SR 201 scaling receivers also present switched content throughout the situation room. The FOX3 switching system enforces three levels of security - unclassified, secret, and top secret, depending on need and who is within the room. A TLP Pro 1725TG 17" tabletop touch-panel allows room occupants to easily select the content displayed on the videowall and ancillary displays and to control the PTZ camera used for videoconferencing.



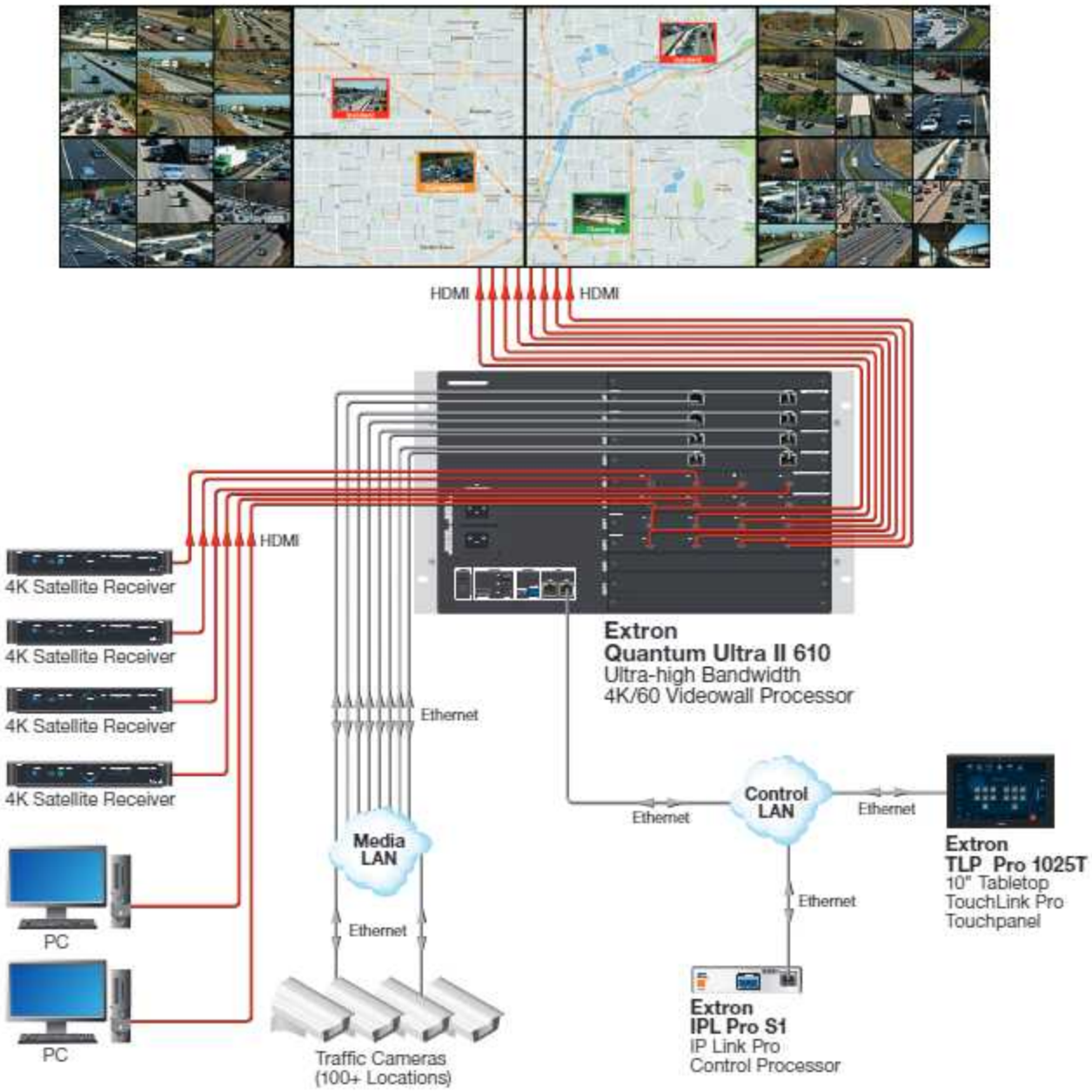
Museum

A museum incorporates a Quantum Ultra II in a unique, interactive visual exhibit. Six portrait-oriented 4K displays comprise the 1x6 videowall. 4k media players provide animated artwork centered around themes such as music, landscapes, and wildlife. Two 4K computers provide animated graphics and museum information. Localized image files stored on the Quantum Ultra II provide backgrounds for the source windows. Quantum OUT4HDMI 4K PLUS output cards deliver video to the displays, with the first output feeding an HAE 100 4K Plus to provide audio to the sound system. The Quantum Ultra II connects directly to the control network via Ethernet, with a TLP Pro 1025T TouchLink Pro touchpanel allowing museum patrons to select from available artwork themes.



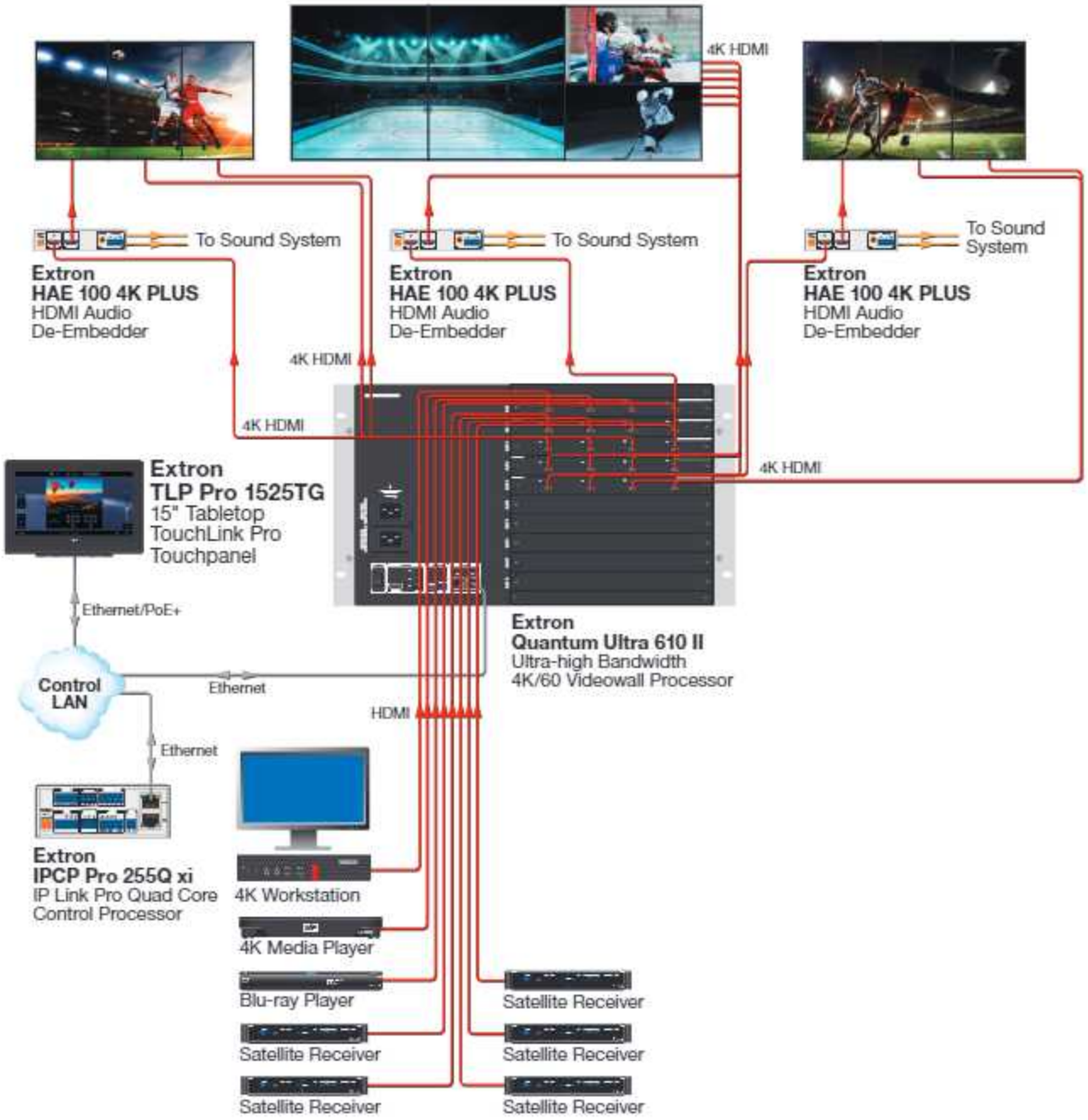
Traffic Management Center

A municipal traffic management center utilizes a 2x4 videowall driven by a Quantum Ultra II processor to present up-to-the-minute traffic information, maps, and breaking news to a traffic management team. The eight displays receive signals from two Quantum OUT4HDMI 4K PLUS cards. Live traffic streams received from IP traffic cameras located throughout the city are decoded by four Quantum IN SMD 100 cards. Two Quantum IN4HDMI 4K PLUS input cards receive signals from four 4K satellite receivers and two workstation computers that provide live broadcast feeds and graphical map content. Operators can highlight traffic feeds affected by congestion or emergency events using the videowall processor's dynamic window borders and labels feature. The Quantum Ultra II processor connects directly to the control network via Ethernet, with a TLP Pro 1025T TouchLink Pro touchpanel providing easy system control for the operators.



Themed restaurant

A Quantum Ultra II in a sports-themed restaurant drives three videowalls that present live broadcasts of sporting events and other sports-themed media. A 2x3 videowall consisting of six landscape-oriented 4K/60 displays is centered on the main wall. Six portrait-oriented 4K/60 displays comprise two 1x3 videowalls, each positioned to either side of the 2x3 videowall. Five satellite receivers supply live broadcast content, while a Blu-ray Disc player and a 4K media player provide playback of pre-recorded content. Corporate messaging presented on the videowalls is sourced from a 4K workstation computer and image files stored locally on the Quantum Ultra II processor. Empty slots in the chassis provide ample room for future expansion. Embedded audio from any source can be switched to each videowall and extracted using an HAE 100 4K Plus. The processor connects directly to the control network via Ethernet. A TLP Pro 1525TG TouchLink Pro touchpanel allows staff to easily select the content displayed on the videowalls.



NOTES

NOTES

SPECIFICATIONS

TRUE 4K

Max 4K Capabilities		
Resolution and Frame Rate	**Chroma Sampling**	**Max Bit Depth per Color**
4096 x 2160 at 30 Hz	4:4:4	10 bit
3840 x 2160 at 30 Hz		
4096 x 2160 at 60 Hz	4:4:4	8 bit
3840 x 2160 at 60 Hz		

Frame rate	24, 25, 30, 50, or 60 fps
Chroma sampling[2]	4:4:4 or 4:2:2
Color bit depth[1]	8 or 10 bits per color
Signal Type	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3
Max. video data rate	18 Gbps (6 Gbps per color) per connection

NOTE: [1]Subject to the maximum data rate limit. Use our calculator at www.extron.com/8Kdatarate to determine video parameters supported by this data rate.

NOTE: [1]Subject to the maximum data rate limit. Use our calculator at www.extron.com/4Kdatarate to determine video parameters supported by this data rate.

VIDEO INPUT — HDMI — IN4HDMI 4K PLUS

Number/signal type	4 HDMI/DVI
Connectors	4 female HDMI
Maximum pixel clock (inputs 1-4)	600 MHz
Vertical frequency	24 Hz to 240 Hz
Resolution range	640x480 to 4096x2400 480i, 576i, 480p, 576p, 720p, 1080i, 1080p, 2048x1080, 3840x2160, 4096x2160
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

VIDEO PROCESSING — HDMI — IN4HDMI 4K PLUS AND IN4HDMI

Digital sampling	8 or 10 bits per color
Colors	1.07 billion (10-bit processing with full 4:4:4 sampling)

VIDEO INPUT — FOX3 — IN4FOX3

Number/signal type	1 or 2 fiber optic SFP modules per input (four inputs per card)
Connectors	1, 2, or 3 LC connectors per input (four inputs per card)
Data rate	10 Gbps (1 SFP) or 20 Gbps (2 SFPs)
Maximum pixel clock	600 MHz
Horizontal frequency	24 kHz to 135 kHz
Vertical frequency	24 Hz to 120 Hz
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

VIDEO PROCESSING — FOX3 — IN4FOX3

Digital pixel data bit depth	8 or 10 bits per channel
Colors	1.07 billion (10-bit processing with full 4:4:4 sampling)

VIDEO INPUT — HDMI — IN4HDMI

Number/signal type	HDMI/DVI
Connectors	4 female HDMI
Maximum pixel clock	
Inputs 1 and 3	165 MHz
Inputs 2 and 4	300 MHz

NOTE: Pixel clocks up to 300 MHz are supported on input connectors 2 and 4 only. The unit disables adjacent input connectors 1 or 3 when configured to support 300 MHz.

Standards	DVI 1.0, HDMI 1.4, HDCP 1.4

VIDEO INPUT — SMD — IN SMD 100

Number/signal type	Up to 30 H.264/AVC digital video over IP (quantity dependent on stream resolution)
Connectors	2 shielded RJ-45 (decoding capability distributed equally between connections)
Ethernet data rate	10/100/1000Base-T
Network protocols	ARP, DHCP, DNS, HTTP, HTTPS, ICMP (ping), SSH, SSC, Telnet, TLS
Video coding	MPEG4 part 10 (AVC) H.264 BP, MP, HiP to level 4.2 (<25 Mbps over 1 second), MJPEG

VIDEO PROCESSING — SMD — IN SMD 100

Source rates	480p to 1920x1080p @ 60 Hz

NOTE: Interlaced sources are not supported.

Maximum average bit rates	25 Mbps per stream (1 second average)
Latency	1.0 second maximum
Digital sampling	24-bit, 8 bits per color, 165 MHz pixel clock maximum

VIDEO OUTPUT — HDMI — OUT4HDMI 4K PLUS

Number/signal type	4 HDMI/DVI
Connectors	4 female HDMI
Maximum pixel clock (outputs 1-4)	600 MHz
Vertical frequency	23.98 Hz, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 50 Hz, 59.94, 60 Hz
Scaled resolutions	1024x768, 1280x768, 1280x800,1280x1024, 1360x768, 1366x768, 1440x900, 1400x1050, 1680x1050, 1600x1200, 1920x1200, 2048x1200, 2048x1536, 2560x1080, 2560x1440, 2560x1600, 3840x2400, 4096x2400, CUSTOM 720p, 1080p, 2048x1080, 1920x2160, 2048x2160, 3840x2160, 4096x2160
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

VIDEO OUTPUT — FOX3 — OUT4FOX3

Number/signal type	1 or 2 fiber optic SFP modules per output (four outputs per card)
Connectors	1, 2, or 3 LC connectors per output (4 outputs per card)
Vertical frequency	23.98 Hz, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 50 Hz, 60 Hz, 75 Hz
Standards	DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

VIDEO OUTPUT — HDMI — OUT4HDMI

Number/signal type	HDMI/DVI
Connectors	4 female HDMI
Maximum pixel clock	Outputs 1 and 3: 165 MHz Outputs 2 and 4: 300 MHz

NOTE: Pixel clocks up to 300 MHz are supported on input connectors 2 and 4 only. The unit disables adjacent output connectors 1 or 3 when configured to support 300 MHz.

Standards	DVI 1.0, HDMI 1.4, HDCP 1.4

VIDEO OUTPUT — DTP — OUT4DTP

Number/signal type	4 DTP, XTP, or HDBaseT (configurable)
Connectors	4 female RJ-45
Maximum pixel clock	Outputs 1 and 3: 165 MHz Outputs 2 and 4: 300 MHz

NOTE: Pixel clocks up to 300 MHz are supported on input connectors 2 and 4 only. The unit disables adjacent output connectors 1 or 3 when configured to support 300 MHz.

Standards	DVI 1.0, HDMI 1.4, HDCP 1.4

OPTICAL FIBER INTERCONNECTION BETWEEN TRANSMITTER/RECEIVER

Number/type	1 or 2 SFPs
Connectors	1, 2, or 3 LC connectors
Data rate	10.0 Gbps (1 fiber) or 20.0 Gbps (2 fibers)

AUDIO — IN4HDMI 4K PLUS, OUT4HDMI 4K PLUS, IN4FOX3, OUT4FOX3

Supported pass-through formats	
IN4HDMI 4K PLUS, OUT4HDMI 4K PLUS	LPCM up to 7.2/24-bit/192 kHz, Dolby TrueHD, Dolby Digital Plus, Dolby Digital ES, Dolby Digital 5.1, Dolby Digital 2/0 Surround, Dolby Digital 2/0, Dolby Atmos 7.2, DTS-HD, DTS ES Discrete 6.1, DTS ES Matrix 6.1, DTS Digital Surround 5.1, DTS 2-channel
IN4FOX3, OUT4FOX3	LPCM 2.0, up to 24-bit/48 kHz

SPECIFICATIONS

AUDIO INPUT — IN4HDMI 4K PLUS, IN4FOX3	
Number/signal type	
IN4HDMI 4K PLUS	4 HDMI embedded
IN4FOX3	1 or 2 fiber optic SFP modules per input (4 inputs per card)
Connectors	
IN4HDMI 4K PLUS	4 female HDMI
IN4FOX3	1, 2, or 3 LC connectors per input (4 inputs per card)

AUDIO OUTPUT — OUT4HDMI 4K PLUS, OUT4FOX3	
Number/signal type	
OUT4HDMI 4K PLUS	4 HDMI embedded
OUT4FOX3	1 or 2 fiber optic SFP modules per output (4 outputs per card)
Connectors	
OUT4HDMI 4K PLUS	4 female HDMI
OUT4FOX3	1, 2, or 3 LC connectors per output (4 outputs per card)

COMMUNICATION	
External device (pass-through, unidirectional or bidirectional) (RS-232/IR over TP)	
Serial control pass-through ports	
"Over TP" output	RS-232 via (4) 3.5 mm, 5-pole captive screw connectors (shared with IR ports)
Baud rates	9600, 19200, 38400, 115200 baud
IR pass-through control ports	TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
"Over TP" output	(4) 3.5 mm, 5-pole captive screw connector (shared with RS-232 port)

COMMUNICATION — CONTROL	
Serial control port	1 RS-232 on 3-pole captive screw connector on rear panel
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity (default)
Ethernet ports	2 female RJ-45
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect
USB control port	1 female USB mini-B on rear panel
Program control	Extron Videowall Configuration Software (VCS) for Windows® Extron Simple Instruction Set™ (SIS™) Extron Express Mobile Software (EMS) Telnet

COMMUNICATION — CHASSIS TO CHASSIS INTERCONNECTION	
Number/signal type	32 HyperLane channels
Connectors	3 female MPO (12 fibers per connector)
Data rate	Up to 15.7 Gbps per channel
HyperLane expansion limit	5 chassis

COMMUNICATION — SETUP	
Number/signal type	1 HDMI
Connector	1 female HDMI
USB control ports	3 USB type A
USB standards	USB 2.0, USB 1.1, USB 1.0 compatible

GENERAL	
Power supply	
Quantum Ultra II 610	Internal (IEC 60320 C20 inlet), primary and redundant*, hot-swappable *A redundant power supply is standard.
North America	Input: 120 VAC, 50-60 Hz, 20 A Input: 240 VAC, 50-60 Hz, 15 A
Other regions	Input: 100-120 VAC, 50-60 Hz, minimum 15 A Input: 200-240 VAC, 50-60 Hz, minimum 7 A
Quantum Ultra II 305	Internal (IEC 60320 C14 inlet) Input: 100-240 VAC, 50-60 Hz
Mounting	
Rack mount	Yes
Enclosure dimensions	
Quantum Ultra II 610	10.5" x 17.5" W x 22" D (6U high, full rack wide) (267 mm H x 445 mm W x 559 mm D) (Depth excludes connectors and handles. Width excludes built-in rack ears.)
Quantum Ultra II 305	5.25" H x 17.5" W x 19" D (3U high, full rack wide) (133 mm H x 445 mm W x 483 mm D) (Depth excludes connectors and handles. Width excludes built-in rack ears.)
Regulatory compliance	CE, c-UL, UL, KC, PSE, RoHs, and WEEE
Product warranty	3 years parts and labor
Everlast power supply warranty	7 years parts and labor

Model	Version Description	Part Number
Quantum Ultra II 610	6U, 10-slot Frame	60-1900-01
Quantum Ultra II 305	3U, 5-slot Frame	60-1899-01
Quantum IN4HDMI 4K PLUS	Four-channel 4K/60 HDMI Input Card	70-1199-01
Quantum IN4FOX3 L MM	Lossless Multimode Fiber Input Card	70-1324-01
Quantum IN4FOX3 L SM	Lossless Singlemode Fiber Input Card	70-1324-02
Quantum IN4FOX3 U MM	Uncompressed Multimode Fiber Input Card	70-1324-03
Quantum IN4FOX3 U SM	Uncompressed Singlemode Fiber Input Card	70-1324-04
Quantum IN4HDMI	Four-channel HDMI Input Card	70-1117-01
Quantum IN SMD 100	Multi-Channel Streaming Decoder Card	70-1232-01
Quantum OUT4HDMI 4K PLUS	Four-channel 4K/60 HDMI Output Card	70-1200-01
Quantum OUT4FOX3 L MM	Lossless Multimode Fiber Output Card	70-1325-01
Quantum OUT4FOX3 L SM	Lossless Singlemode Fiber Output Card	70-1325-02
Quantum OUT4FOX3 U MM	Uncompressed Multimode Fiber Output Card	70-1325-03
Quantum OUT4FOX3 U SM	Uncompressed Singlemode Fiber Output Card	70-1325-04
Quantum OUT4HDMI	Four-channel HDMI Output Card	70-1118-01
Quantum OUT4DTP	Four-channel DTP Output Card	70-1162-01
S3 Product Commissioning	Product Commissioning Services	03-001-01

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

S3 Videowall Commissioning

Extron Videowall Commissioning is a proactive, on-site service that ensures your Quantum® Ultra, Quantum Elite, or Quantum Connect processing system meets your customer's specifications for performance. An Extron Systems Design Engineer - SDE will provide personalized assistance, from conception to completion, to help you deliver a system that fully meets the expectations of your customer.

Extron Videowall Commissioning Includes:

- Pre-installation design review services
- Window layout optimization
- On-site processor and source optimization
- Validation of processor control
- Basic Quantum control software training for the system operator

Extron

www.extron.com

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