

Specifications

Quantum Ultra II

NOTE: The Quantum Ultra II 610 has 10 slots for input or output cards, and the Quantum Ultra II 305 has 5 slots.

TRUE 4K specifications

Max. 4K Capabilities		
Resolution and Refresh Rate	Chroma Sampling	Max. Bit Depth per Color
4096x2160 at 30 Hz	4:4:4	10 bit
3840x2160 at 30 Hz		
4096x2160 at 60 Hz	4:4:4	8 bit
3840x2160 at 60 Hz		

Frame rate¹ 24, 25, 30, 50, or 60 fps
 Chroma sampling¹ 4:4:4 and 4:2:2; 4:2:0 (at input only)
 Color bit depth¹ 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 per color) per connection

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

Video input – HDMI – IN4HDMI 4K PLUS

Number/signal type HDMI/DVI
 Connectors 4 female HDMI
 Maximum pixel clock (inputs 1-4) ... 600 MHz
 Formats RGB and YCbCr digital video
 Horizontal frequency 15 kHz to 270 kHz
 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 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
 Resolution range 640x480 to 4096x2160,
 480p, 576p, 720p, 1080i, 1080p, 2048x1080, 3840x2160,
 4096x2160
 Formats RGB and YCbCr digital video
 Standards DVI 1.0, HDMI 1.4 and 2.0, HDCP 1.4 and 2.3

Specifications • Quantum Ultra II (Continued)

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
Formats.....	RGB and YCbCr digital video
Horizontal frequency.....	15 kHz to 135 kHz
Vertical frequency.....	24 Hz to 75 Hz
Resolution range.....	640x480 to 3840x2400*
	480i, 576i, 480p, 576p, 720p, 1080i, 1080p, 2048x1080, 3840x2160*, 4096x2160*
	*4K resolutions are supported up to 30 Hz refresh rate. 4K at 60Hz is supported using two or four parallel connections.

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
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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
Streaming protocols	
Pull streams.....	RTP/RTCP (RFC 3550), RTSP (RFC 2326), interleaved RTSP (RTP/RTSP), RTP/RTSP tunneled through HTTP
Push streams.....	MPEG-2 TS/UDP (ISO/IEC 13818-1), MPEG-2 TS/RTP (RFC 2250), Direct RTP (RFC 3984)
Stream discovery.....	SAP (RFC 2974), SDP (RFC 4145, RFC 4566)
Transport.....	TCP, UDP, multicast IGMPv2 (RFC 2236), IGMPv3 (RFC 3376), SSM (RFC 3569, 4607), or unicast (pull streams only)
Network protocols.....	ARP, DHCP, DNS, HTTP, HTTPS, ICMP (ping), SSC, SSH, Telnet, TLS
Container (if included).....	MPEG-2 TS (MPEG-2 part 1 or ISO/IEC 13818-1 or ITU-T Rec. H.222.0) MP4 (MPEG-4 part 14 or ISO/IEC 14496-14)
Video coding.....	MPEG4 part 10 (AVC) H.264 BP, MP, HiP to level 4.2 (<25 Mbps over 1 second), MJPEG

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 processing – FOX3 – IN4FOX3

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

Video processing – SMD – IN SMD 100

Source rates.....	480p to 1920x1080p @ 60 Hz
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NOTE: Interlaced streams 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
Colors.....	16.78 million (8-bit processing)

Specifications • Quantum Ultra II (Continued)

Video output – HDMI – OUT4HDMI 4K PLUS

Number/signal type.....	HDMI/DVI
Connectors.....	4 female HDMI
Maximum pixel clock (Outputs 1-4)	600 MHz
Peripheral device power.....	250 mA per output
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 (four inputs per card)
Vertical frequency	23.98 Hz, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 50 Hz, 60 Hz, 75 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 – 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
Peripheral device power.....	250 mA per output
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, 1680x1050, 1600x1200, 1920x1200, 2048x1200, 2048x1536*, 2560x1080*, 2560x1440*, 2560x1600*, 3840x2400*, 4096x2400**, CUSTOM 720p, 1080p, 2048x1080, 1920x2160, 2048x2160, 3840x2160*, 4096x2160*
	*Supported on connectors 2 and 4 only
	**Requires 4 parallel connections.

NOTE: Pixel clocks up to 300 MHz are supported on output 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
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Video output – DTP – OUT4DTP

Number/signal type	4 DTP, XTP, or HDBaseT (configurable)
Connectors	4 female RJ-45
Termination standard	TIA/EIA T568B
Maximum pixel clock	Outputs 1 and 3 165 MHz Outputs 2 and 4 300 MHz
Vertical frequency	23.98 HZ, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 50 Hz, 59.94 Hz, 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*
	*Supported on connectors 2 and 4 only.
	**Requires 4 parallel connections.

NOTE: Pixel clocks up to 300 MHz are supported on output 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
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Specifications • Quantum Ultra II (Continued)

Optical fiber interconnection between transmitter and receiver

Number/type	1 or 2 SFPs
Connectors	1, 2, or 3 LC connectors
Operating distance	
Singlemode	20 km (12.4 miles) with singlemode (SM) cables
Multimode	500 m (1640 feet) with 50 µm OM4 4700 MHz bandwidth laser optimized multimode cables

NOTE: The system works with OM1, OM2, and OM3 fiber at reduced distances.

NOTE: Operating distance is approximate. These are typical maximum distances that may vary depending on factors such as fiber type, fiber bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks.

Nominal peak wave length	850 nm for multimode, 1310 nm for singlemode
Data rate	10.0 Gbps (1 fiber) or 20.0 Gbps (2 fibers)
Transmission power	
Singlemode	-5.2 dBm, minimum
Multimode	-2.8 dBm, minimum
Maximum receiver sensitivity	
Singlemode	-12.6 dBm, maximum
Multimode	-11.1 dBm, maximum
Optical loss budget	
Singlemode	+7.4 dB, maximum
Multimode	+8.3 dB, maximum

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 EX, 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

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 (four inputs per card)

Connectors

IN4HDMI 4K PLUS 4 female HDMI

IN4FOX3 1, 2, or 3 LC connectors per input (four 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 (four outputs per card)

Connectors

OUT4HDMI 4K PLUS 4 female HDMI

OUT4FOX3..... 1, 2, or 3 LC connectors per output (four outputs per card)

Communications – external device (pass-through, unidirectional, or bidirectional) (RS-232/IR over TP)

NOTE: Protocol is mirrored between the connected TP endpoints and the "Over TP" ports on the OUT4DTP. Signals from a control device pass into each OUT4DTP "Over TP" port, are embedded with the TP signal, and sent to individual TP Rx endpoints for control of remote sink devices.

The "Over TP" ports are simple pass-through connections to TP endpoints. There is no IR insertion from any Quantum Ultra II control port to the "Over TP" ports. RS-232 can be inserted from the Ethernet connection.

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
Protocol.....	6 - 8 data bits 1 or 2 stop bits no parity (default), even or odd parity flow control = XON, XOFF, none
Serial control pin configuration.	1 = Tx, 2 = Rx, 3 = Gnd
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)
IR control pin configuration	3 = Gnd, 4 = IR Tx, 5 = IR Rx

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)
Pin configurations.....	1 = Tx, 2 = Rx, 3 = Gnd
Ethernet ports.....	2 female RJ-45
Ethernet default settings	Link speed and duplex level = autodetected LAN A IP address = 192.168.254.254 LAN B IP address = 192.168.1.254 Subnet mask = 255.255.255.0 Gateway = 0.0.0.0 DHCP = Off
Ethernet data rate.....	10/100/1000Base-T, half/full duplex with autodetect
Protocols.....	ARP, DHCP, DNS, HTTP, ICMP, NTP, SSH, SMTP, TCP/IP, Telnet, UDP/IP
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

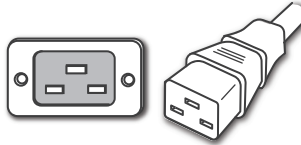
Number/signal type.....	1 HDMI
Connector.....	1 female HDMI
Vertical frequency.....	24 Hz to 60 Hz
Resolutions	640x480 to 1920x1200
USB control ports	3 USB type A
USB standards.....	USB 2.0, USB 1.1, USB 1.0 compatible
USB data rates.....	Low speed (1.5 Mbps), full speed (12 Mbps)

Specifications • Quantum Ultra II (Continued)

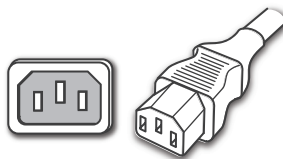
General

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

Power consumption

Quantum Ultra II 610 60-1065 watts (varies with configuration)
 Quantum Ultra II 305 38-288 watts (varies with configuration)

Temperature/humidity Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
 Operating: +32 to +95 °F (0 to +35 °C) / 10% to 90%, noncondensing

Cooling Fans, right to left (as viewed from the front panel)

Thermal dissipation

Quantum Ultra II 610 208-3591 BTU/hr (varies with configuration)
 Quantum Ultra II 305 127-956 BTU/hr (varies with configuration)

Mounting

Rack mount..... Yes

Enclosure type Metal

Enclosure dimensions

Quantum Ultra II 610 10.5" H 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.)

Product weight

Quantum Ultra II 610 47.4 - 87.9 lbs (21.5 - 39.9 kg) (varies with configuration)
 Quantum Ultra II 305 28.1 - 48.4 lbs (12.7 - 22.0 kg) (varies with configuration)

Regulatory compliance..... CE, c-UL, UL, KC, PSE, RoHs, and WEEE

Warranty 3 years parts and labor

Everlast power supply warranty..... 7 years parts and labor

NOTE: All nominal levels are at ±10%.

NOTE: Specifications are subject to change without notice.

NOTE: Shipping weights and dimensions are available at www.extron.com.