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# Specifications

## Quantum® Elite Series

**NOTE:** The Quantum Elite 615 has 15 slots for factory-installed input or output cards, and the Quantum Elite 408 has 8. Each slot can accommodate up to 12 S-video or composite video inputs, 2 analog RGB or component video inputs, 2 DVI inputs, 2 HDMI inputs, 2 3G/HD/SD-SDI inputs, 2 RGB or DVI outputs, or 2 HDMI outputs.

### Video input — composite and S-video — QEC I12VID

Number/signal type .....	12 S-video, composite video
Connectors .....	2 female 26-pin HD (included adapter allows input on 24 female BNC connectors)
Nominal level .....	1 Vp-p for Y of S-video and for composite video 0.3 Vp-p for C of S-video
Minimum/maximum levels .....	Analog: 0.1 V to 2.0 Vp-p with no offset
Impedance .....	75 ohms
Horizontal frequency .....	15 kHz
Vertical frequency .....	50 Hz, 59.94 Hz

### Video processing — QEC I12VID

Digital sampling .....	8 bits per color; 13.5 MHz standard
Colors .....	16.78 million

### Sync — QEC I12VID

Standards .....	NTSC 3.58, NTSC 4.43, PAL, SECAM
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### Video input — QEC I2RGB

Number/signal type .....	2 analog VGA-WUXGA RGBHV, RGsB, HDTV, component video
Connectors .....	2 female 15-pin HD
Nominal level .....	1 Vp-p for Y of component video and for G of RGsB 0.7 Vp-p for RGB and for Pr and Pb of component video
Minimum/maximum levels .....	Analog: 0.3 V to 2.0 Vp-p with no offset
Impedance .....	75 ohms
Horizontal frequency .....	15 kHz to 100 kHz
Vertical frequency .....	50 Hz to 75 Hz
Resolution range .....	640x480 to 1920x1200, NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p

### Video processing — QEC I2RGB

Digital sampling .....	24 bit, 8 bits per color; 205 MHz standard (RGB, component video)
Colors .....	16.78 million

### Sync — QEC I2RGB

Input type .....	RGBHV, RGsB, bi-level or tri-level component video
Input level .....	2.75 V to 5.0 Vp-p for RGBHV 0.6 Vp-p for component video tri-level sync 0.3 Vp-p for component video bi-level sync or RGsB
Impedance .....	2.2k ohms for H and V
Max. input voltage .....	5 Vp-p
Polarity .....	Positive or negative

## Video input — QEC I2DVI

Number/signal type .....	2 digital VGA-WUXGA RGB single link DVI
Connectors .....	2 female DVI-I (analog signals are not supported)
Horizontal frequency .....	31 kHz to 100 kHz
Vertical frequency.....	24 Hz to 85 Hz
Resolution range .....	640x480 to 1920x1200, 480p, 576p, 720p, 1080i, or 1080p
Formats.....	RGB digital video
Standards.....	DVI 1.0

## Video processing — QEC I2DVI

Maximum data rate.....	4.95 Gbps (1.65 Gbps per color)
Digital sampling .....	24 bit, 8 bits per color; 165 MHz standard (RGB)
Colors .....	16.78 million

## Video input — QEC I2HDMI

**NOTE:** \*Appropriate HDMI to DVI cables or adapters are required for DVI signal input/output.

Number/signal type .....	2 single link HDMI (or DVI*)
Connectors .....	2 female HDMI type A (analog signals are not supported)
Signal type .....	Single link HDMI (or DVI*)
Digital video .....	RGB digital video (DVI and HDMI standards) or Y, Cr, Cb digital component video (HDMI standard)
EDID and DDC .....	Supports Extended Display Identification Data (EDID) and Display Data Channel (DDC) data using DVI and HDMI standards. Factory or custom EDID tables are user selectable.
HDCP .....	Compliant with High-bandwidth Digital Content Protection (HDCP) using DVI and HDMI standards
Horizontal frequency .....	31 kHz to 100 kHz
Vertical frequency.....	24 Hz to 85 Hz
Resolution range .....	640x480 to 1920x1200, 480p, 576p, 720p, 1080i, or 1080p
Standards.....	DVI 1.0, HDMI, HDCP
Equalization .....	Automatic

## Video processing — QEC I2HDMI

Maximum data rate.....	4.95 Gbps (1.65 Gbps per color)
Digital sampling .....	24 bit, 8 bits per color; 165 MHz standard
Colors .....	16.78 million

## Video input — QEC I2SDI

Number/signal type .....	2 3G/HD/SD-SDI
Connectors .....	2 female HD-BNC (HD-BNC to female BNC adapters are included.)
Data rates .....	270 Mbps to 2.97 Gbps
Horizontal frequency .....	15 kHz to 100 kHz
Vertical frequency.....	23.98 Hz to 60 Hz
Resolution range .....	480i, 576i, 720p, 1080i, or 1080p
Formats.....	YCbCr digital component video
Return loss .....	<-15 dB @ 1 MHz to 1.5 GHz

Input cable equalization .....	Automatic for up to -30 dB of cable loss
3G-SDI.....	60 meters (200 feet) using Extron RG6 cable 45 meters (150 feet) using Extron RG59 cable
HD-SDI .....	120 meters (400 feet) using Extron RG6 cable 90 meters (300 feet) using Extron RG59 cable
SDI .....	150 meters (500 feet) using Extron RG6 cable 120 meters (400 feet) using Extron RG59 cable

**NOTE:** The transmission distance varies depending on the signal resolution and on the type of cable.

Standards.....	SMPTE 259M-C, SMPTE 292M, SMPTE 424M
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### Video processing — QEC I2SDI

Maximum data rate.....	2.97 Gbps
Digital sampling .....	24 bit, 8 bits per color
Colors .....	16.78 million

### Video input — QGE 100 (remote hardware)

Number/signal type .....	1 analog VGA-UXGA or digital VGA-WUXGA RGBHV, RGBS, RGsB, single link DVI 1 analog or digital loop-through
Connectors .....	2 female DVI-I
Impedance .....	75 ohms
Horizontal frequency.....	31 kHz to 100 kHz
Vertical frequency.....	50 Hz to 85 Hz
Resolution range .....	640x480 to 1920x1200* *1920x1200 is accepted for DVI single link, reduced blanking only
Formats.....	RGB, digital video
Standards.....	DVI 1.0

### Video processing — QGE 100 (remote hardware)

Maximum data rate.....	4.95 Gbps (1.65 Gbps per color)
Digital sampling .....	24 bit, 8 bits per color, 165 MHz standard
Colors .....	16.78 million

### Sync — QGE 100 (remote hardware)

Input type .....	RGBHV, RGBS, RGsB
Input level .....	2.75 V to 5.0 Vp-p for RGBHV 0.3 Vp-p for RGsB
Impedance .....	2.2k ohms for H and V
Max. input voltage .....	5 Vp-p
Polarity.....	Positive or negative

### Video processing — QEC O2

Maximum data rate.....	4.95 Gbps (1.65 Gbps per color)
Digital sampling .....	24 bit, 8 bits per color, 165 MHz standard
Colors .....	16.78 million

## Video output — QEC O2

Number/signal type .....	2 scaled RGBHV or single link DVI
Connectors .....	2 female DVI-I (analog and digital signals are both active)
Nominal level .....	0.7 Vp-p for RGB
Minimum/maximum levels.....	0.0 V to 1.0 Vp-p
Impedance .....	75 ohms
Vertical frequencies .....	50 Hz, 60 Hz
Scaled resolution .....	640x480 <sup>1,2</sup> , 800x600 <sup>1,2</sup> , 848x480 <sup>1,2</sup> , 1024x768 <sup>1,2</sup> , 1152x870 <sup>1,2</sup> , 1280x768 <sup>1,2</sup> , 1280x800 <sup>1,2</sup> , 1280x1024 <sup>1,2</sup> , 1360x768 <sup>1,2</sup> , 1366x768 <sup>1,2</sup> , 1440x900 <sup>1,2</sup> , 1400x1050 <sup>1,2</sup> , 1408x1050 <sup>1,2</sup> , 1600x1200 <sup>1,2</sup> , 1680x1050 <sup>1,2</sup> , 1920x1200 <sup>1,2</sup> HDTV: 720p <sup>1,2</sup> , 1080p <sup>1,2</sup> <sup>1</sup> = at 50 Hz, <sup>2</sup> = at 60 Hz
Standards.....	DVI 1.0

## Sync — QEC O2

Output type .....	RGBHV
Output level .....	2.4 Vp-p for RGBHV
Output impedance .....	2.2k ohms
Polarity.....	Positive or negative

## Video processing — QEC O2HDMI

Maximum data rate.....	4.95 Gbps (1.65 Gbps per color)
Digital sampling .....	24 bit, 8 bits per color, 165 MHz standard
Colors .....	16.78 million

## Video output — QEC O2HDMI

Number/signal type .....	2 scaled single link HDMI (HDCP compliant)
Connectors .....	2 female HDMI type A
Vertical frequency.....	50 Hz, 60 Hz
Scaled resolutions.....	640x480 <sup>1,2</sup> , 800x600 <sup>1,2</sup> , 848x480 <sup>1,2</sup> , 1024x768 <sup>1,2</sup> , 1152x870 <sup>1,2</sup> , 1280x768 <sup>1,2</sup> , 1280x800 <sup>1,2</sup> , 1280x1024 <sup>1,2</sup> , 1360x768 <sup>1,2</sup> , 1366x768 <sup>1,2</sup> , 1440x900 <sup>1,2</sup> , 1400x1050 <sup>1,2</sup> , 1408x1050 <sup>1,2</sup> , 1600x1200 <sup>1,2</sup> , 1680x1050 <sup>1,2</sup> , 1920x1200 <sup>1,2</sup> HDTV: 720p <sup>1,2</sup> , 1080p <sup>1,2</sup> <sup>1</sup> = at 50 Hz, <sup>2</sup> = at 60 Hz
Standards.....	DVI 1.0, HDMI, HDCP

## Control/remote — processor/decoder/scaler

Ethernet ports .....	1 female RJ-45 connector for control, networked 2 female RJ-45 for media transfer (QGE 100 sources)
Ethernet data rate .....	Control port: 10/100Base-T, half/full duplex with autodetect
Quantum Elite 615 .....	Media I and II ports: 10/100/1000Base-T, half/full duplex with autodetect
Quantum Elite 408 .....	Media I: 10/100Base-T, half/full duplex with autodetect Media II: 10/100/1000Base-T, half/full duplex with autodetect
Ethernet protocol	
Control port.....	IP, TCP
Media ports .....	IP, TCP, UDP, DHCP
Ethernet default settings	
Control port.....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = not supported
Media ports .....	Link speed and duplex level = autodetected Media I IP address = 192.168.254.252 Media II IP address = 192.168.254.253 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off

## Storage

Quantum Elite 615 .....	C drive: 512 MB, solid state drive D drive: 256 MB, solid state drive
Quantum Elite 408 .....	80 GB (1 IDE drive partitioned for C and D drives)
Internal operating system .....	Microsoft® Windows® XP® embedded
Program control .....	Extron Quantum Elite control/configuration software for Windows

**NOTE:** The operating system is hard-coded into the Quantum Elite and Windows updates are not required. The C drive, which contains the operating system, is write protected to prevent unauthorized access.

## Control/remote — setup and troubleshooting

### Number/signal type

Quantum Elite 615 .....	1 analog VGA-UXGA RGBHV local monitor 2 USB 1 PS/2 mouse 1 PS/2 keyboard
Quantum Elite 408 .....	1 analog VGA-UXGA RGBHV local monitor 2 USB 1 PS/2 mouse and keyboard

### Connectors

Quantum Elite 615 .....	1 female 15-pin HD 2 USB type A 2 female PS/2 (6-pin mini DIN)
Quantum Elite 408 .....	1 female 15-pin HD 2 USB type A 1 female PS/2 (6-pin mini DIN) (Breakout cable to 2 PS/2 connectors is included.)

USB standards..... USB 2.0, low speed

## General

### Power supply

Quantum Elite 615 ..... Internal  
Input: (2\*) 100-240 VAC, 50-60 Hz power supplies  
\*A redundant power supply is standard.

Quantum Elite 408 ..... Internal  
Input: (1) 100-240 VAC, 50-60 Hz power supply

Power consumption ..... 300-500 watts (varies with configuration)

Temperature/humidity ..... Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 85%, noncondensing  
Operating: +35 to +95 °F (5 to +35 °C) / 10% to 85%, noncondensing

Cooling..... Fans, front to rear

Thermal dissipation ..... 300-1350 BTU/hr (varies with configuration)

### Mounting

Rack mount..... Yes

Enclosure type..... Metal

### Enclosure dimensions (per unit)

Quantum Elite 615 ..... 10.5" H x 17.1" W x 19.3" D (6U high, full rack wide)  
(26.7 cm H x 43.3 cm W x 49.0 cm D)  
(Depth excludes connectors and handles. Width excludes built-in rack ears.)

Quantum Elite 408 ..... 7.0" H x 17.1" W x 19.3" D (4U high, full rack wide)  
(17.8 cm H x 43.3 cm W x 49.0 cm D)  
(Depth excludes connectors and handles. Width excludes built-in rack ears.)

### Product weight

Quantum Elite 615 ..... Without boards: 48 lbs (21.8 kg)  
Fully loaded: 56.7 lbs (25.7 kg)

Quantum Elite 408 ..... Without boards: 36 lbs (16.3 kg)  
Fully loaded: 41.5 lbs (18.8 kg)

Boards ..... 0.3 lb (0.6 kg)

Shipping weight

Quantum Elite 615 ..... Without boards: 60 lbs (27 kg)  
Fully loaded: 69 lbs (31 kg)

Quantum Elite 408 ..... Without boards: 47 lbs (21 kg)  
Fully loaded: 53 lbs (24 kg)

Boards ..... 2 lbs (1 kg) per board

Vibration ..... ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

Safety ..... CE, c-UL, UL, Korea KC Mark

EMI/EMC ..... CE, FCC Class A

Environmental..... Complies with the appropriate requirements of RoHS, WEEE.

Warranty..... 3 years parts and labor

**NOTE:** All nominal levels are at  $\pm 10\%$ .

**NOTE:** Specifications are subject to change without notice.

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