MGP 641 xi 5K

5K MULTI-WINDOW PROCESSOR WITH DTP3 EXTENSION

VECTOR 4K SCALING

18 Gbps 4K/60 4:4:4

DTP3 SYSTEMS

ULTRA-WIDE

MULTI-WINDOW PROCESSING AND ANNOTATION FOR ENHANCED PRESENTATION OF 5K VIDEO CONTENT

- Display up to four source windows on a single canvas with a live or static background
- Live annotation capabilities with optional Extron LinkLicense
- Four HDMI inputs - MGP 641 xi 5K
- Four 12G-SDI inputs in addition to four HDMI inputs - MGP 641 xi 5K SDI
- Supports 4K and 5K signals at 4:4:4 on all inputs and outputs
- 16:9, 21:9, and 32:9 aspect ratio support
- Integrated DTP3 extension supports transmission of 4K/60 and 5K video up to 330' (100 m) over a shielded CAT 6A cable
- Advanced Extron Vector™ 4K scaling engine

Extron

MGP 641 xi 5K

The Extron MGP 641 xi 5K is a multi-window processor that scales and presents up to four 5K HDMI source signals on a single screen. It supports displays with aspect ratios of 16:9, 21:9, and 32:9. It features Extron Vector™ 4K scaling technology and annotation capabilities with an Extron LinkLicense®. The HDCP 2.3-compliant processor supports live, non-scaled content or graphic images behind the source windows, which can be arranged anywhere on the output canvas. The MGP 641 xi 5K SDI model includes support for 12G-SDI sources. HDMI and DTP3 outputs deliver duplicate signals to local and remote displays in landscape or portrait orientations. Providing enhanced content presentation with customizable windows and transition effects, and optional on-screen annotation, the MGP 641 xi 5K is ideal for high-end environments and live events.

ULTRA-WIDE

Ultra-Wide signal support allows for resolutions up to 5120x2880 with 4:4:4 color sampling on the processor's inputs and outputs. This ensures compatibility with sources and displays having aspect ratios of 16:9, 21:9, 32:9, and more.

An optional Extron LinkLicense enables annotation capabilities for MGP 641 xi 5K and MGP 641 xi 5K SDI Multi-Window Processors. It allows presenters to annotate over live video and graphics making it easier to engage with the audience.

DTP3 SYSTEMS

The DTP3 twisted pair output supports uncompressed 4K/60 @ 4:4:4 signal extension up to 330 feet (100 meters) over a shielded CAT 6A cable when paired with DTP3 endpoints. It is compatible with all DTP3-enabled products and configurable to work with Extron XTP II CrossPoint® modular matrix switchers, as well as HDBaseT®-enabled displays.

The MGP 641 xi 5K is well suited for any environment that requires multi-window presentation and high-end video processing of 4K and 5K content. This can include retail, restaurants, corporate boardrooms, auditoriums, houses of worship, and other live presentation venues. For enhanced presentations, the MGP 641 xi 5K gives users ultimate flexibility and control. It provides fully customizable window layouts, source and output video rotation, logo image keying and display, and many other operational and integration-friendly features.

Optional Live Annotation with Extron LinkLicense

Real-Time Annotation

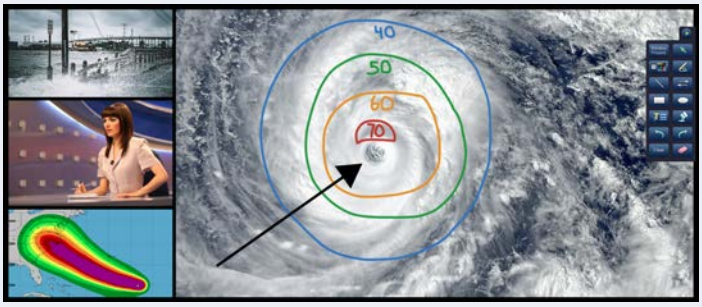
The LinkLicense for MGP 641 xi Annotation upgrade allows presenters to annotate over live video or graphics using a touch screen display or mouse.

Customizable Intuitive On-Screen Menu

User-friendly graphical icons and intuitive menus provide quick access to essential annotation tools.

Capture and Store Images

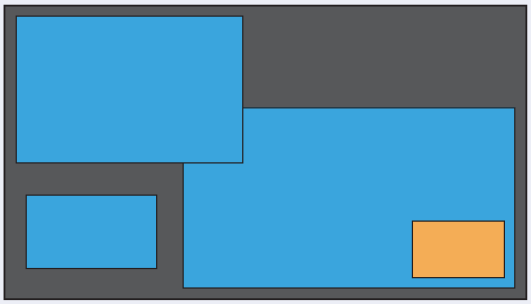
Annotated screen images can be captured, stored, and recalled from internal memory or a removable USB flash drive.



Flexible Presentation Options

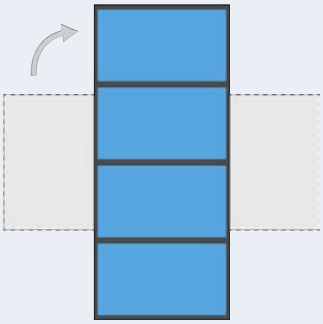
Window Placement

Source windows can be placed freely anywhere on the output canvas. The can be isolated, overlap, or presented as PIP. Layouts can be saved to any of the 128 preset slots.



Output Rotation

The duplicate HDMI and DTP3 output signals can be rotated clockwise or counterclockwise by 90 degrees, accommodating portrait or landscape display arrangements.



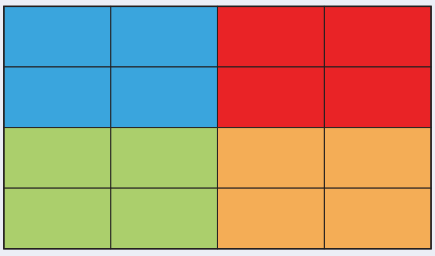
HDMI 2.0 Background Input

Live Video Background from a Dedicated HDMI Source

Live and non-scaled full-motion content from an HDMI source can be used as a background for any presentation, providing an additional input for backgrounds, tickers, or other content.

Cascade Multiple MGP 641 xi Processors

The background input can also accommodate additional MGP 641 xi 5K processors to create a large-scale single digital canvas with up to 16 fully customizable windows on the one display. All windows can be sized, overlapped, and positioned anywhere on the screen.



FEATURES

Display up to four source windows on a single screen with a live or static background
Simplifies system design by reducing the need for multiple displays.

Supports computer and video resolutions up to 5K @ 4:4:4
Supports HDMI 2.0 signals up to 4096x2160 at 60 Hz and 5120x2880 at 30 Hz with 4:4:4 color sampling.

Integrated DTP3 extension supports transmission of uncompressed 4K/60 video up to 330' (100 m) over a shielded CAT 6A cable

HDCP 2.3 compliant
Ensures display of content-protected media and interoperability with other HDCP-compliant devices.

User-selectable HDCP authorization
Allows individual inputs to appear HDCP compliant or non-HDCP compliant to the connected source, which is beneficial if the source automatically encrypts all content when connected to an HDCP-compliant device. Protected material is not passed in non-HDCP mode.

HDCP Visual Confirmation
When HDCP-encrypted content is transmitted to a non-HDCP compliant display, a green window provides immediate visual confirmation that protected content cannot be viewed on that display.

Key Minder® continuously verifies HDCP compliance for quick, reliable switching
Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching, while enabling simultaneous distribution of a single source signal to two or more displays.

EDID Minder® automatically manages EDID communication between connected devices

Fully customizable window layouts
Up to four windows can be sized, positioned, and overlapped anywhere on the display, with additional adjustments for zoom and priority.

Adjust window size and position with a USB touch screen or mouse

Dynamic input detection
Instead of conventional lookup tables, Vector 4K technology dynamically analyzes incoming digital video signal parameters for precise signal detection, conversion, and scaling. This capability facilitates fast, flexible detection of both standard and custom resolutions.

Custom output resolutions
Maximizes compatibility with evolving display technology, non-standard displays, and direct-view LED systems.

Auto-layout mode
Automatically configures the window layout to a full screen, side by side, pyramid, or a quad arrangement, based on which inputs have an active signal.

Seamless presentation of signals sourced from upstream devices
Signals sourced from an upstream switcher can be transitioned using cut to black, fade to black, seamless cut, or seamless fade for clean, professional-looking presentations.

Image freeze control
Any window can be frozen and unfrozen via the front panel, RS-232, or Ethernet control.

Window mute control
Any window can be added or removed via the front panel, RS-232, or Ethernet control.

128 presets for simple, fast recall of window layouts
A total of 128 default window presets are available and customizable to allow quick saving and recall of size, positioning, priority, and border style for each window.

Window preset effects
Transitions between presets can be set to Cut or Animated. The Animated effect dynamically resizes and repositions the four windows to the locations determined by a new preset. Duration is adjustable.

Screen Saver Mode
Can be set to automatically mute video and sync output to the display device when no active connections or logos are displayed.

Customizable on-screen clock
An on-screen digital clock can be presented anywhere on screen, with user-definable size, color, and time/date formatting.

Capture, store, and recall images to a USB flash drive
An image can be captured as a snapshot of the video output and saved to internal memory or a removable USB flash drive for archiving.

Stereo audio de-embedding
Embedded two-channel HDMI LPCM and SDI AES audio can be extended over the DTP3 output or extracted as balanced or unbalanced stereo audio to the analog outputs.

Aspect ratio control

Front panel controls with LCD display
Back-lit front panel buttons and an LCD menu system with navigation controls ensure simplified operation and setup.

Front panel USB configuration port

Built-in Web pages
Enables the use of a standard browser for device monitoring and simple troubleshooting over an intuitive Web interface.

Easy-to-use configuration and control software
Extron Videowall Configuration Software - VCS reduces configuration and preset programming time with a task-oriented, intuitive interface.

Ethernet monitoring and control
Enables control and proactive monitoring over a LAN or WAN.

RS-232 control port

Front panel security lockout
Locks out front panel functions; all functions remain available through Ethernet, USB, or RS-232 control.

Compatible with all DTP3- and DTP-enabled products, XTP II CrossPoint® matrix switchers, and HDBaseT-enabled devices

Rack-mountable 1U, full rack width metal enclosure

Internal Extron Everlast™ power supply
Provides worldwide power compatibility, with high demonstrated reliability and low power consumption for reduced operating cost.

Extron Vector 4K Scaling Technology

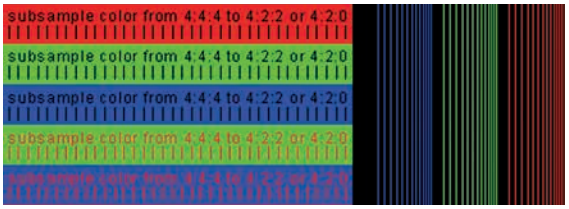
Extron Vector 4K is the latest generation of our video scaling engines and is specifically engineered for critical-quality 4K imaging. Innovative applications utilizing 4K content and displays continue to emerge, with end users demanding sharp, detailed, and professionally crafted imagery from their systems. To meet this important criterion, Extron has continually evolved our series of signal processing technologies for upscaling, downscaling, and optimally converting 4K signals or any other source content.

Engineered by Extron from the Ground Up

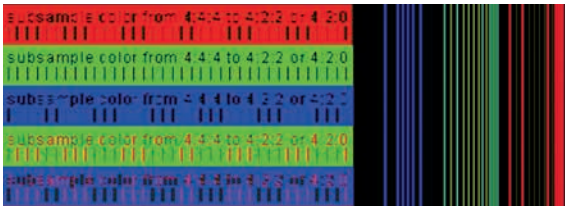
Vector 4K was developed internally by Extron's expert team of signal processing engineers. They have crafted patented image processing technologies that set the industry benchmark for visual performance. Features such as 4:4:4 chroma sampling and bicubic scaling ensure optimal image quality and preserve detail present in the original source material.

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 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.



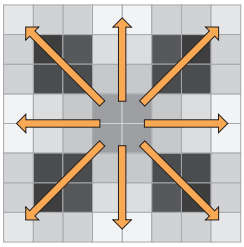
4:4:4 Chroma Sampling



4:2:2 Chroma Subsampling

Bicubic Interpolation

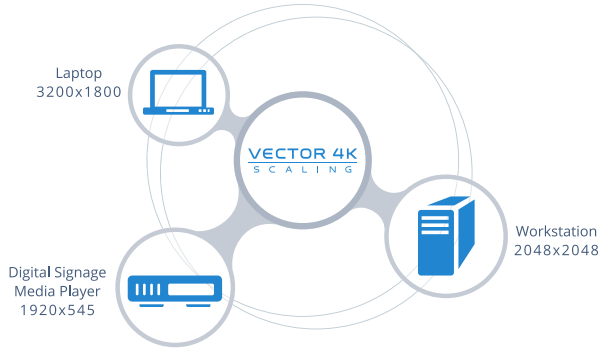
The Vector 4K scaling engine incorporates Extron-patented, multi-tap, bicubic interpolation, which creates a new pixel by averaging adjacent pixels above, below, to the sides, and diagonally of the new pixel. This produces sharp, accurate output, preserving single-pixel detail that other scaling methods 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.



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.

OVERVIEW

Display content from up to four sources on a single screen
Simplifies system design by reducing the need for multiple displays.

128 window configuration presets
Allows for quick saving and recall of size, positioning, priority, and border style of each window.

Seamless presentation of signals sourced from upstream devices
Includes various cut and fade transitions for professional-looking presentations.

Fully customizable window layouts
Control window size, zoom, priority, position, and overlapping anywhere on the screen.

User-friendly interface
An LCD display, direct access buttons, and rotary controls enable detailed adjustment of image settings and simplified configuration.

Back-lit buttons on front panel
Simplify live operation and source status identification.

Window Mute
Any window can be added or removed via the front panel, RS-232, USB, or Ethernet.

Image Freeze
Any window can be frozen and unfrozen via the front panel, RS-232, USB, or Ethernet.

Logo image keying and display
Up to 32 logo graphics in BMP, JPG, PNG, or TIFF format may be uploaded to the unit.

Custom output resolutions
Maximizes compatibility with evolving display technologies, non-standard displays, and direct-view LED systems.

Dynamic input detection
Facilitates fast, flexible detection of both standard and custom resolutions.

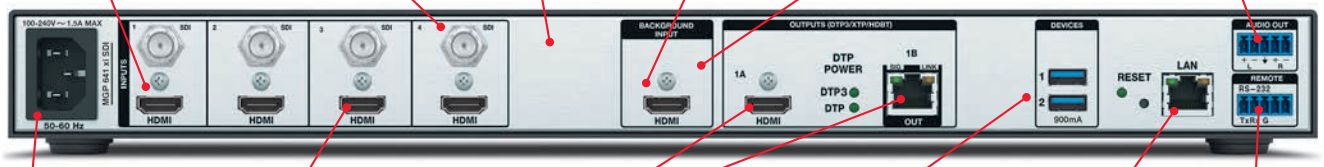
12G-SDI inputs
Independently selectable HDMI and 12G-SDI inputs are available with the MGP 641 xi 5K SDI model.

HDCP 2.3 compliance
Ensures display of content-protected video media and interoperability with other HDCP-compliant devices.

HDMI 2.0 background input
Accepts non-scaled live background content from a computer or other HDMI source.

Cascade multiple MGP 641 xi 5K processors
Up to four MGP 641 xi 5K units can be cascaded via the HDMI 2.0 background input to present up to 16 windows on a single display.

Stereo audio de-embedding
Embedded two-channel HDMI LPCM and SDI AES audio can be extended over the DTP3 output or extracted as balanced or unbalanced stereo audio to the analog outputs.



Internal Extron Everlast power supply
Provides high-demonstrated reliability and low power consumption for reduced operating cost.

HDMI 2.0 inputs
Accepts signals up to 4096x2160 @ 60 Hz and 5120x2880 @ 30 Hz with full 4:4:4 color processing.

HDMI 2.0 and DTP3 outputs
Duplicate HDMI and DTP3 outputs support connection to local and remote displays.

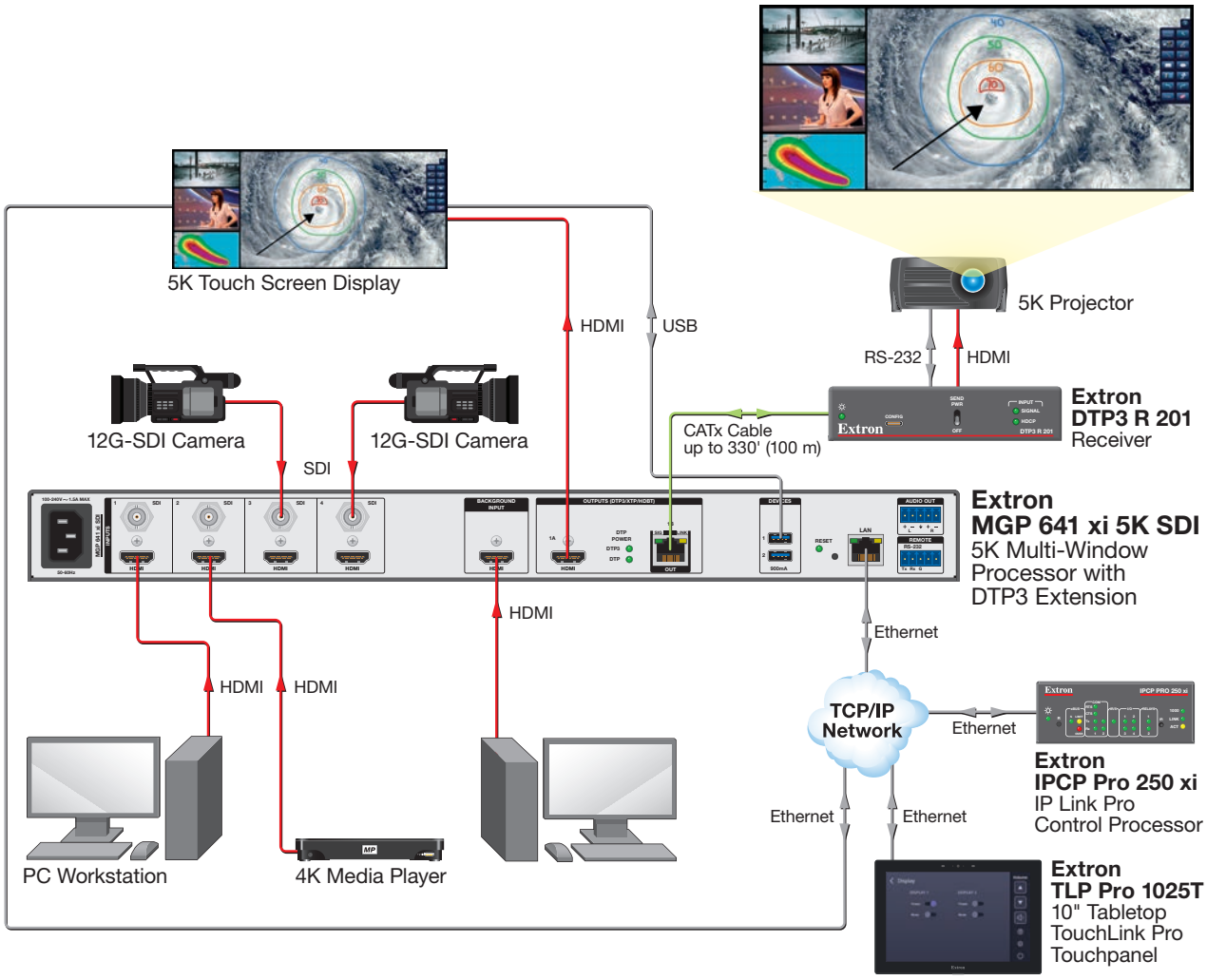
USB 5 Gbps ports
Control window size and position using a touch screen or mouse. Capture and store images to a USB flash drive.

Ethernet monitoring and control
Enables operation using a network-based control system or Extron Videowall Configuration Software - VCS.

RS-232 monitoring and control
Facilitates integration with a control system.

Weather Monitoring

An MGP 641 xi 5K SDI receives content from PC workstations and 12G-SDI cameras. The PC workstations present weather applications with up-to-the-minute radar and mapping information, while the 12G-SDI cameras can capture out-the-window views or personnel. The HDMI 2.0 and DTP3 outputs send duplicate signals to a 5K projector used for group viewing, and a local 5K touch screen preview display which is also used for annotating content. Room operators can easily adjust the window size and position from the touch screen display. Window positions are stored as presets and recalled using a TLP Pro 1025T TouchLink® Pro Touchpanel.



SPECIFICATIONS

TRUE 4K SPECIFICATION

HDMI

Max 4K Capabilities		
Resolution and Refresh Rate	**Chroma Sampling**	**Max Bit Depth per Color**
5120 x 1440 at 60 Hz 5120 x 2880 at 30 Hz 4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:4:4	8 bit
4096 x 2160 at 30 Hz 3840 x 2160 at 30 Hz		10 bit
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:0	8 bit

SDI

Max 4K Capabilities		
Resolution and Refresh Rate	**Chroma Sampling**	**Max Bit Depth per Color**
4096 x 2160 at 60 Hz 3840 x 2160 at 60 Hz	4:2:2	10 bit

Frame rate[1]	24, 25, 30, 50, or 60 Hz
Chroma sampling[1]	4:4:4, 4:2:2, 4:2:0
Color bit depth[1]	8 or 10 bits per color
Signal Type	HDMI 2.0, HDCP 2.3, 6G-SDI, 12G-SDI
Max. video data rate[1]	
HDMI	18 Gbps (6 Gbps per color)
SDI	11.88 Gbps per SDI 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.

VIDEO INPUT

Number/signal type	4 HDMI/DVI 1 HDMI/DVI (Live Background) 4 12G/6G/3G/HD/SD SDI (SDI model only)
Resolution range	
VESA	640x480 to 4096x2160
SMPTE	480i, 576i, 480p, 576p, 720p, 1080i, 1080p, 2K, 3840x1440, 4096x2160
Ultra Wide and 5K	2560x1080, 3440x1440, 3840x1080, 3840x1440, 3840x1600 5120x1080, 5120x1440, 5120x2160*, 5120x2560*, 5120x2880* *Supported at 30 Hz only

VIDEO PROCESSING

Digital sampling	30 bit, 10 bits per color, 600 MHz pixel clock maximum
Maximum video data rate	17.82 Gbps (5.94 Gbps per color)

VIDEO OUTPUT

Number/signal type	1 HDMI/DVI 1 DTP3/XTP/HDBT configurable
Vertical frequencies	23.98 Hz, 24 Hz, 25 Hz, 29.97 Hz, 30 Hz, 50 Hz, 59.94 Hz, 60 Hz, 75 Hz
Scaled resolution	
VESA	640x480, 800x600, 1024x768, 1280x768, 1280x800, 1280x1024, 1360x768, 1366x768, 1440x900, 1600x900, 1400x1050, 1680x1050, 1600x1200, 1920x1200, 2048x1200, 2048x1536, 2560x1080, 2560x1440, 2560x1600
SMPTE	480p, 576p, 720p, 1080i, 1080p, 2048x1080, 3840x2160, 4096x2160
Ultra Wide and 5K	2560x1080, 5120x1080, 5120x1440, 5120x2160*, 5120x2560*, 5120x2880* *Supported at 30 Hz only
Standards	DVI 1.0, HDMI 2.0, HDCP 1.4 and 2.3

AUDIO

Frequency response	20 Hz to 20 kHz, ± 0.5 dB

AUDIO INPUT

Number/signal type	5 HDMI embedded audio (including HDMI background input) 4 SDI embedded audio (SDI model only)

AUDIO OUTPUT

Number/signal type	1 balanced or unbalanced stereo (stereo or dual mono channels) 1 HDMI, embedded 1 DTP3/XTP/HDBT (embedded digital and remote balanced/unbalanced analog**) **Available only in DTP mode
Maximum level (Hi-Z)	>+21 dBu balanced, >+15 dBu unbalanced

INTERCONNECTION BETWEEN MGP AND DTP/HDBT RECEIVER

Signal transmission distance	
4096x2160 @ 60 Hz	Up to 330' (100 m) using shielded twisted pair (STP) cable or XTP DTP 22 STP cable

CONTROL/REMOTE

Serial control port	1 RS-232 on captive screw connector on back panel
Ethernet control port	1 female RJ-45 connector
Memory	4 GB flash
USB control port	1 USB, female USB-C on front panel

USB DEVICE PORTS

Number/signal type	2 USB devices (only one touchpanel supported)
USB standards	USB 3.0, USB 2.0, USB 1.1, USB 1.0 compatible

GENERAL

Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Enclosure dimensions (per unit)	1.75" H x 17.5" W x 12.0" D (1U high, full rack wide) (44 mm H x 445 mm W x 305 mm D) (Depth excludes connectors and knobs. Width excludes rack ears.)
Regulatory compliance	CE, c-UL, UL, C-tick, FCC Class A, ICES, KC, VCCI, RoHs, and WEEE

NOTE: All nominal levels are at ±10%.

Model	Version Description	Part number
MGP 641 xi 5K	Four Windows, with HDMI Inputs	60-1574-13
MGP 641 xi 5K SDI	Four Windows, with HDMI and 12G-SDI Inputs	60-1574-14
LinkLicense	MGP 641 xi & MGP 641 xi SDI Annotation Upgrade	79-2599-01

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

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