MGP 464

FOUR WINDOW MULTI-GRAPHIC PROCESSOR

- Combines full-motion video and RGB input sources:
  - – RGBHV, RGBS, RGsB
  - – Component video
  - – S-video & composite video
- Optional DVI inputs
- RGB/component video and DVI outputs
- 48 scaled output rates, including HDTV and UXGA (1600 x 1200)
- Custom picture-in-picture controls and configurations
- Graphic Still Store
- DVI background video input
- Window transition effects
- 128 picture-in-picture memory presets
- IP Link® Ethernet Control

High performance graphics processing for professional multi-image presentations

Extron® Electronics

www.extron.com

Introduction

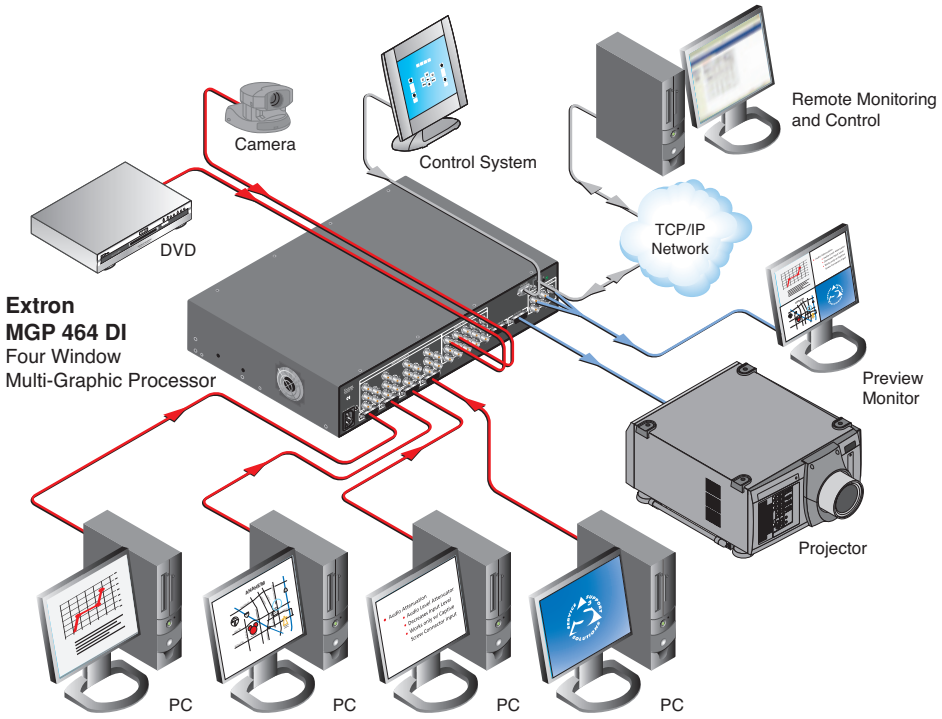
The Extron **MGP 464** and **MGP 464 DI** Four Window Multi-Graphic Processors are powerful, high resolution graphics processors that enable the simultaneous display of multiple images on a single screen. They are ideal for applications demanding critical quality graphics and video presentations including command and control centers, videoconferencing, medical facilities, courtrooms, and boardrooms. The MGP 464 and MGP 464 DI each combine high performance graphics scaling with customizable flexible and picture-in-picture functionality.

A wide range of input sources can be accommodated, from composite video to HDTV 1080p, and computer-video at up to 1600 x 1200 resolution. Four DVI inputs are also available on the MGP 464 DI. Any of up to 19 available inputs to the MGP 464 can be scaled and placed in any of up to four windows for picture-in-picture display. The MGP 464 outputs a total of 48 scan rates, including UXGA computer-video and HDTV 1080p, through analog RGB or component video as well as DVI.

An advanced feature set enables custom multi-image displays, including picture-in-picture window positioning, size, zoom, priority, image freeze, bordering with selectable colors, and text labeling. The MGP 464 incorporates picture and window fine tuning controls for infinitely variable picture-in-picture customization. Windows can appear and disappear using elegant effects including wipes and dissolves for enhanced, professional quality multi-image presentations.

With Extron's Graphic Still Store, screen captures of the current output can be stored for use as presentation background images. Alternatively, BMP bitmap graphics can be uploaded from a PC via the IP Link Ethernet port, and recalled as a background. In addition, live video from a DVI source can also serve as the background to any presentation. Images stored on the MGP 464 can be downloaded to a PC through IP Link for archival use.

The MGP 464 features full front panel controls for comprehensive, integrator and user-friendly access to all functions. Remote control of the MGP 464 is available via RS-232 with Extron SIS™ - Simple Instruction Set. IP Link Ethernet control enables remote management and support from any computer with a Web browser.



Overview

Image freeze control
Any selected input for each picture-in-picture window can be frozen, enabling extended viewing for analysis.

True 19x4 input matrix
Integrate up to 19 input sources, and then route any input signal source to any or all four on-screen windows.

Picture-in-picture memory presets
Custom picture-in-picture window configurations can be conveniently saved and recalled.

LCD interface
The user-friendly easy-to-read LCD display simplifies operation and control.

MGP 464 Front

Back-lit input selection buttons
Input selection buttons are easily identifiable using back-lit buttons with clear overlay labels, enabling simple front panel operation.

Window selection buttons
These buttons enable selection of windows for picture and window adjustments.

Menu and Next
The Menu button steps through the set-up menus, while the Next button navigates within each set-up menu.

Picture and window adjustments
Adjustments for picture color, tint, brightness, contrast, and detail, as well as window position, size, and zoom, can be directly accessed through the front panel.

Fully configurable inputs
The MGP 464 features four fully configurable inputs that accommodate a wide range of sources, including RGB, component video, S-video, and composite video.

Virtual video inputs
Configure these inputs for up to 19 composite video, five S-video, or five component video sources, or various customized combinations of all three formats.

RS-232 and RS-422 control
The MGP 464 can be controlled and configured via the Extron Windows®-based control program, or integrated into third-party control systems.

IP Link

IP Link Ethernet control enables the MGP 464 to be managed and proactively monitored from any authorized Web client.

MGP 464 DI Back

High resolution input compatibility
The four fully configurable inputs accept computer-video resolutions up to UXGA (1600 x 1200) as well as video sources including HDTV 720p, 1080i, and 1080p.

DVI inputs – MGP 464 DI
Four DVI inputs are available for integration of DVI digital video sources into A/V systems.

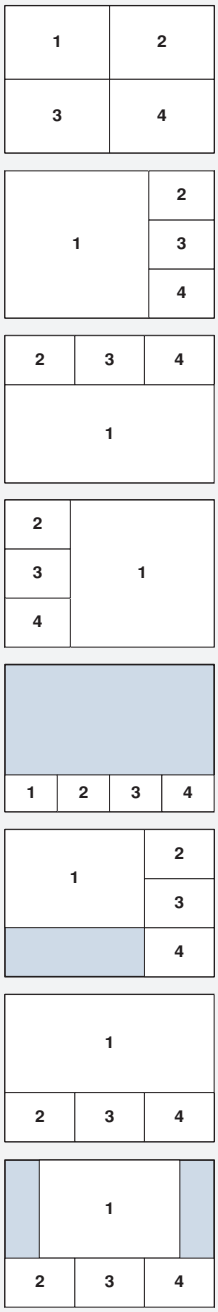
DVI background input
This special DVI input is for providing live, high resolution background images for any presentation. Two or three MGP 464 units may be cascaded for large-scale applications that require up to 8 or 12 windows.

Analog RGB/Component Video and DVI Outputs
High resolution picture-in-picture video is output simultaneously as analog RGB/component video and DVI.

What's inside the MGP 464

Memory Presets

A total of 128 default memory presets for picture-in-picture window configurations are available, including 30 that are factory-preloaded. These can be customized for quick saving of configurations and recall of size, positioning, and priority for both windows.



High Resolution, Multi-Image Presentations

The MGP 464 delivers multi-image displays comprising high resolution multimedia and video, including HDTV, enabling enhanced possibilities for high impact, professional quality A/V communications. The MGP 464 features reference quality scaling and proprietary, high resolution graphics processing for full compatibility with computer-video and HDTV sources, and optimum performance with the latest presentation displays.

Fully Configurable Inputs

The MGP 464 features four fully configurable inputs on BNC connectors that accommodate RGBHV, RGBS, RGsB, RGBcvS, component video, S-video, or composite video. High resolution sources can include computer-video signals up to UXGA (1600 x 1200), and HDTV up to 1080p.

True 19x4 Input Matrix Switcher

A built-in 19 input, four output matrix switcher allows any input signal source to be routed to any, or all, on-screen windows. This provides total flexibility in creating, adapting, and controlling multi-window presentations.

Four Custom Picture-in-Picture Windows

The MGP 464 features picture-in-picture window configurations that are fully customizable to the requirements of any application. Each of the four available windows can display any connected input source, and can be independently positioned, sized, and zoomed. Picture adjustments are also available, including color, tint, brightness, contrast, and detail. Fine tuning controls on the front panel enable precise adjustments as necessary for the needs of the presentation. In addition, colors can be selected for the picture-in-picture background and window borders.

Graphic Still Store

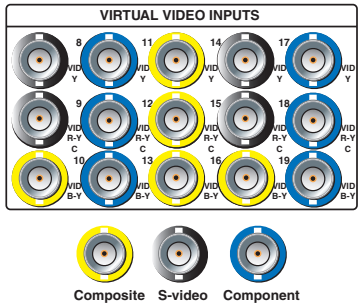
Graphic Still Store is a powerful feature which captures any currently displayed output, and then stores the image in memory for use as a background. Additionally, BMP - bitmap graphics can be uploaded to the MGP 464 via the IP Link port, and recalled as a background. With Graphic Still Store, static images can be integrated with the four dynamic video or graphic windows for use in the multimedia presentations. Images stored on the MGP 464 can be downloaded to a PC as BMP files for archival purposes.

Live Video Background

In addition to Graphic Still Store, live, high resolution computer-video or HDTV from a DVI source can be used as a background to any presentation. The special DVI input connection for full-motion background images is also useful in cascading two or three MGP 464 units to create large-scale displays with up to eight or 12 windows.

Virtual Video Inputs

In addition to the four fully configurable inputs, up to 15 virtual video inputs are available for component video, S-video, and composite video. The virtual video inputs accept up to 15 composite video sources, up to five component video sources, up to five S-video or five composite video connections, or wide-ranging combinations of all three formats to suit the requirements of various applications.



Optional DVI Input

Standard with the MGP 464 DI are four DVI - Digital Visual Interface inputs. These DVI inputs enable easy integration of digital video sources into A/V systems, and together with the DVI output, enable the MGP 464 to operate within an all-digital video system.

Analog RGB/Component Video and DVI Outputs

The MGP 464 simultaneously outputs analog and digital - DVI - RGB computer-video or HDTV component video signals for compatibility with virtually any display device.

Scaled Output Resolutions

The MGP 464 offers 48 scaled output rates, including the following resolutions for computer-video, projectors, plasma and LCD monitors, and HDTV:

640 x 480	1280 x 1024	1600 x 1200
800 x 600	1360 x 765	480p
852 x 480	1365 x 768	576p
1024 x 768	1366 x 768	720p
1024 x 852	1365 x 1024	1080i
1280 x 768	1400 x 1050	1080p

Transition Effects

For professional quality presentations, windows can be transitioned into and out of the image. Customizable options are available, including dissolves, wipes, and cuts.

Text Overlay

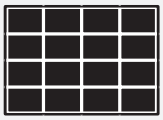
Each picture-in-picture window can be labeled with a text label of up to 16 characters. The text can be uploaded to the MGP 464 via RS-232 or RS-422 control, or IP Link. Custom options are available for

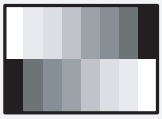
What's inside the MGP 464

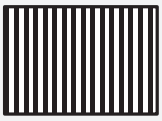
Test Patterns

The MGP 464 offers 15 test patterns, including those shown below and several others such as a crop pattern, ramp, white field, aspect ratio patterns, and a pattern for populating a 4x3 screen with four 4x3 images. It also features a blue-only mode for proper setup of video color and tint levels.

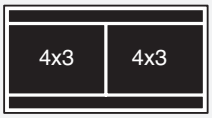

Color Bars (8)


Crosshatch 4x4


Grayscale


Alt Pixels

4x3 Side-by-side Crop



16x9 Side-by-side Crop

16x9 Pattern w/ 4x3 Images


1.85 Aspect Ratio

text positioning, text color, character size, translucent or opaque color background, and text border.

Freeze Control

Any input to a picture-in-picture window can be frozen via the front panel, RS-232 or RS-422 control, or IP Link. This feature enables the MGP 464 to capture frames of video or graphics to display for extended periods of time.

Auto-Image™ Setup

For expedited presentation set-up, the MGP 464 automatically optimizes the image to the scaled output rate. This eliminates complex and time-consuming set-up procedures.

RS-232 and RS-422 Control

Through RS-232 and RS-422, the MGP 464 can be controlled and configured via the Extron Windows®-based control program, or integrated into third-party control systems using Extron SIS™ - Simple Instruction Set serial commands.

Windows Control Software

The included Windows control software provides complete, real-time operation of the MGP 464. The software enables control of all functions and configuration options including window sizing and positioning, virtual video input configuration, and Graphic Still Store. A graphic interface is included for visualization of picture-in-picture windows as they are dynamically sized and positioned.

IP Link

IP Link is a high performance intelligent network integration solution developed by Extron. Ethernet-enabled A/V products, such as the MGP 464, can be managed and supported by a technician or administrator at any time from any authorized Web client. IP Link enables network exchange of BMP image files between the MGP 464 and a PC, as well as remote access to functions and status parameters including the internal operating temperature, and the horizontal and vertical sync frequencies for any input. IP Link also provides for saving and recalling of window presets, as well as picture-in-picture customization and configuration of the virtual video inputs.

MGP 462

Two-window version also available

For two-window applications, the MGP 462 features four fully configurable inputs and output resolutions up to SXGA+ (1400 x 1050). Both MGP versions are designed for easy integration and offer individually scaled inputs with full control of window sizing and screen position. The table below highlights the major distinctions between the MGP 462 and the MGP 464 processors.

	Features	MGP 462	MGP 464
	PIP windows	2	4
Inputs	Total inputs	6	19
	Full configurable analog inputs	4	4
	Virtual inputs		15
	SDI (serial digital) input	1 optional (MGP 462 D)	
	DVI-D inputs		4 optional (MGP 464 DI)
	DVI-D live background input		1
	Computer-video input rate (maximum)	1600 x 1200	1600 x 1200
	HDTV input rate (maximum)	1080p	1080p
Outputs	Total outputs	2	2
	RGBHV output	✓	✓
	15-pin HD (VGA output)	✓	
	DVI-D output		✓
	Scaled output rates	46	48
	Computer-video output rate (maximum)	1400 x 1050	1600 x 1200
	HDTV component (Y Pb Pr) output rate (maximum)	1080p (1440 x 1080)	1080p (1920 x 1080)
Features	Digital Cascade via DVI		✓
	Graphic Still Store	✓	✓
	Test patterns	12	15
	Window preset memories	25	128
	Input preset memories	128	128
	IP Link Ethernet monitoring and control	✓	✓
	Bi-level and tri-level sync	✓	✓
	3:2/2:2 pulldown detection	✓	✓

Key Features & Applications

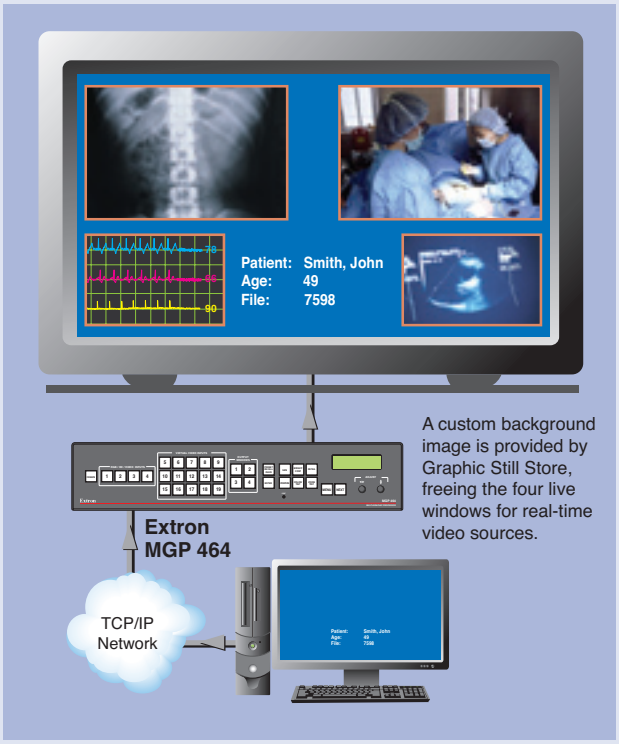
Graphic Still Store

Graphic Still Store is a powerful feature which captures any currently displayed output, and then stores the image in memory for use as a background. Additionally, BMP - bitmap graphics can be uploaded to the MGP 464 via the IP Link Ethernet port, and recalled as a background.

In teaching hospitals, for example, the MGP 464 seamlessly combines the wide range of high resolution computer-video sources, such as CAT scans, MRI images, and vital signs monitor outputs, with standard definition or high definition, full-motion video. A real-time, high resolution x-ray is displayed alongside a live camera feed of the surgery. Other sources may include an EKG and other measurements from the vital signs monitor, as well as CAT scans, ultrasound, and MRI images, recalled from the hospital's central image management system.

The MGP 464's Graphic Still Store is used here to provide a custom background graphic with details about the patient's name, ID number, and case. This frees the four live windows for display of the dynamic, real-time video and computer-video information vital to the hospital's training mission.

Medical facilities also benefit substantially from the capability to download, through IP Link, images captured and stored on the MGP 464. This secondary aspect of Graphic Still Store is useful in documenting case studies and archiving important visual records for future reference.



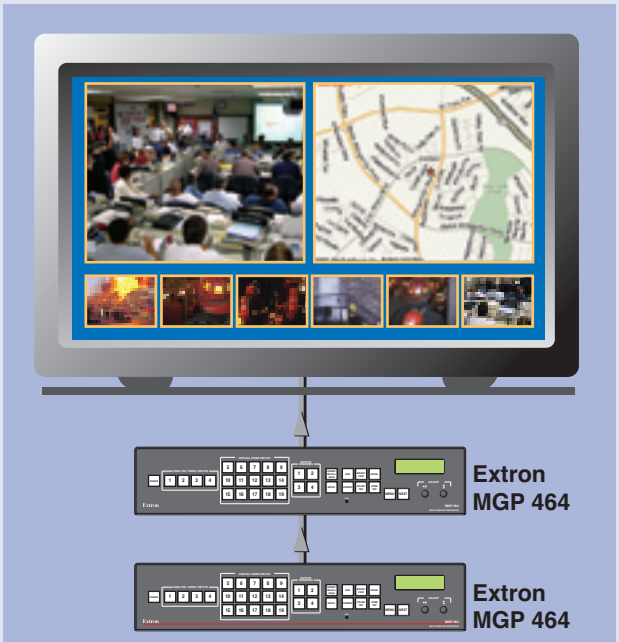
A custom background image is provided by Graphic Still Store, freeing the four live windows for real-time video sources.

Live Video Background

In addition to Graphic Still Store, live, high resolution computer-video or HDTV from a DVI source can be used as a background to any presentation. This dedicated DVI input connection for full-motion background images is useful in cascading two or three MGP 464 units to create large-scale displays with up to eight or 12 windows.

Fast-paced environments, such as those found in emergency operations and command-and-control centers, require the ability to quickly and accurately display multiple video and graphic images simultaneously. In this example, the display of eight windows is created by cascading two MGP 464s by connecting the DVI Output of one unit to the DVI Background Input of the other.

As illustrated, a graphic image of a map, sourced from a PC, provides detailed information about the location of the emerging crisis. Adjacent to the map is a live video feed of the center's director providing response instructions for the operations center staff. Below the two main windows is a row of six small windows showing various live video feeds from the scene, any one of which can be immediately enlarged to fill the screen. Up to 38 video sources, 19 from each MGP 464, are available to the system operator. Depending on the need and application, an additional MGP 464 unit may be cascaded to create a 12-window display.



Each MGP 464 supports up to 19 different video sources, any one of which can be displayed in one of the available on-screen windows. The all-digital DVI link between the MGP 464s ensures the best-possible image quality when cascading two or three MGP 464s together.

Key Features & Applications

Videoconference, Distance Learning, and Corporate Applications

The MGP 464 is used in corporate presentation and distance learning applications to combine near end and far end video sources with high resolution graphics. Here, the main window displays the far end presenter. At the lower left is one of the high resolution data images being presented. Also on screen are windows for the near end video source and additional far end participants. In applications such as this, the text overlay feature of the MGP 464 is effective in identifying the locations and participants from each location. Using serial control or IP Link, text labels can be customized to the content of each window. With formal presentations, such as those typically found in corporate environments, windows can be set to appear into and disappear from the display using a variety of attractive visual effects, including wipes, reveals, and dissolves.

Courtroom Applications

For proceedings in a modern courtroom with advanced A/V presentation technologies, the MGP 464 provides lawyers with the ability to incorporate and combine several of their multimedia sources, including evidence documentation, into a powerful, compelling presentation. Illustrated is a prosecutor's three-window presentation of a re-enacted auto collision, alongside a live transcript of the proceeding. The presentation includes an animated re-enactment of the accident scene, presented as a high resolution graphic source from a PC, along with video camera recordings shot on location from the vantage point of each vehicle involved in the accident. The MGP 464's multi-window output can be distributed to projectors and flat panel displays located throughout the courtroom for counsel, the judge, the witness stand, and the jury. A second, parallel output is available to record the proceedings for archival purposes.

Specifications

VIDEO INPUT

Number/signal type	4 RGBHV, RGBS, RGsB, RsGsBs, RGBcvS, component video (interlaced or progressive), S-video, or composite video 5 to 15 (configurable) component video (interlaced), S-video, or composite video
Connectors	
Inputs 1-4	(4) x 5 female BNC and 4 optional DVI-D
Inputs 5-19	15 female BNC
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels	Analog: 0.0 V to 2.0 Vp-p with no offset at unity gain
Impedance	75 ohms
Horizontal frequency	15 kHz to 100 kHz
Vertical frequency	50 Hz to 120 Hz
Resolution range	640x480 to 1600x1200
DC offset (max. allowable)	0.5 V

VIDEO PROCESSING

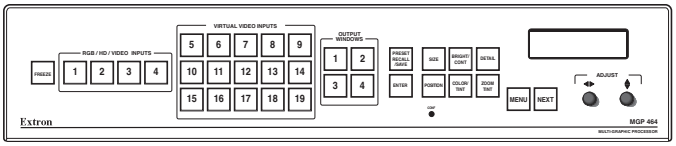
Digital sampling	24 bit, 8 bits per color; 160 MHz standard
Colors	16.78 million

VIDEO OUTPUT

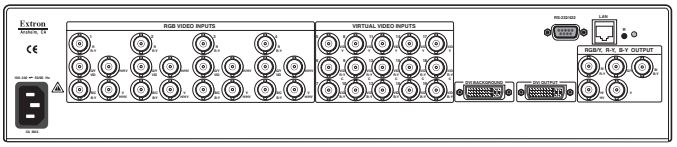
Number/signal type	1 scaled RGBHV, RGBS, RGsB, HD YUV component video
Connectors	5 BNC female, 1 DVI-I female
Nominal level	1 Vp-p for Y of component video 0.7 Vp-p for RGB 0.3 Vp-p for R-Y and B-Y of component video
Minimum/maximum levels	0.0 V to 0.1 Vp-p
Impedance	75 ohms
Vertical frequencies	50 Hz, 60 Hz, 72 Hz, 96 Hz, 100 Hz, 120 Hz
Scaled resolution	640x480[1,2,3,4,5,6], 800x600[1, 2,3,4,5,6], 852x480[1,2,3,4,5], 1024x768[1,2,3,4], 1024x852[1,2,3,4], 1024x1024[1,2,3], 1280x768[2], 1280x1024[1,2], 1360x765[2], 1365x768[2], 1365x1024[2], 1366x768[2], 1400 x 1050[1,2], 1600 x 1200[1,2] HDTV: 480p[2], 576p[1,5], 720p[1,2], 1080i[1,2], and 1080p[1,2], [1] = at 50 Hz [2] = at 60 Hz [3] = at 72 Hz [4] = at 96 Hz [5] = 100 Hz [6] = 120 Hz
Return loss	-30 dB @ 5 MHz
DC offset	±25 mV with input at 0 offset
Switching type	Triple-Action Switching™

SYNC

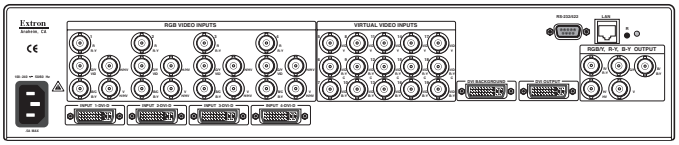
Input type	RGBHV, RGBS, RGsB, RsGsBs, RGBcvS, YUV (tri-level or bi-level on Y channel)
Output type	RGBHV, RGBS, RGsB, RsGsBs, YUV (tri-level or bi-level on Y channel)
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.0 V to 5.0 Vp-p
Output level	0.6 Vp-p for component video (tri-level sync) TTL: 5.0 Vp-p, unterminated for RGBHV, RGBS
Input impedance	510 ohms
Output impedance	75 ohms
Polarity	Positive or negative (selectable)



MGP 464 Series – Front



MGP 464 – Back



MGP 464 DI – Back

CONTROL/REMOTE

Serial control ports	(1) RS-232 or RS-422, 9-pin female D connector (1) RS-232, 2.5 mm mini stereo jack
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
9-pin D connector	RS-232: 2 = TX, 3 = RX, 5 = GND RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = TX+
2.5 mm mini stereo jack	Tip = TX, ring = RX, sleeve = GND
Ethernet control port	1 RJ-45 female connector
Ethernet data rate	10/100Base-T, half/full duplex with autodetect
Ethernet protocol	ARP, DHCP, ICMP (ping), TCP/IP, Telnet, HTTP, SMTP
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™) Microsoft® Internet Explorer, Telnet

GENERAL

Power	100 VAC to 240 VAC, 50/60 Hz, 30 watts, internal, autoswitchable
Rack mount	Yes, with included brackets
Enclosure type	Metal
Enclosure dimensions	3.4" H x 17.5" W x 12.0" D (2U high, 1 rack wide) 8.6 cm H x 44.5 cm W x 30.5 cm D (Depth excludes connectors and knobs. Width excludes rack ears.)
Product weight	8.5 lbs (3.9 kg)
Shipping weight	18 lbs (9 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours

NOTE: All nominal levels are at ±10%

Model	Version Description	Part Number
MGP 464	Standard Version	60-771-01
MGP 464 DI	With Four DVI Inputs	60-771-02

Specifications are subject to change without notice.

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