MAV Plus Series

A/V MATRIX SWITCHERS WITH IP LINK® FOR COMPOSITE VIDEO, S-VIDEO, HDTV/COMPONENT VIDEO, AND MONO OR STEREO AUDIO

- 90 models with I/O sizes from 8x8 to 64x64
- 150 MHz (-3 dB) video bandwidth, fully loaded
- Switches composite video, S-video, HDTV/component video, and stereo audio
- IP Link® Ethernet control and monitoring
- Video genlock and vertical interval switching
- Balanced and unbalanced audio capability
- Audio input gain and attenuation
- Audio output volume control
- Audio breakaway
- Enhanced QS-FPC™ - QuickSwitch Front Panel Controller
- Tri-color, backlit buttons
- Global presets for storing commonly used switching configurations
- RS-232 and RS-422 control port

MAV Plus 3232 AV

The Extron MAV Plus Series matrix switchers are designed to ensure superb signal quality for basic video to high definition video system designs. The MAV Plus Series is ideal for a broad range of video and audio routing requirements in conference centers and auditoriums, command and control centers, university classroom buildings, home theaters and large residential systems, commercial entertainment systems, and many other high-level applications.

DESCRIPTION

The Extron **MAV Plus Series** of A/V Matrix Switchers is designed to suit the requirements of virtually any video or audio switching system. Available in sizes from 8x8 to 64x64, MAV Plus Series matrix switchers accommodate HDTV, component video, S-video, and composite video signals, with or without audio signals. The MAV Plus Series also includes a complete line of mono and stereo audio matrix switchers, capable of switching both balanced and unbalanced audio signals.

The MAV Plus Series builds on Extron's popular, compact MAV Series of Composite Video and S-Video matrix switchers. The series also offers additional I/O sizes up to 64x64. An expanded feature set for the MAV Plus Series includes IP Link Ethernet monitoring and control technology, a new, enhanced QS-FPC™ - QuickSwitch Front Panel Controller with tri-color, backlit buttons, and audio output volume control. For larger, more complex system designs requiring additional inputs and outputs, or for systems routing high definition video signals, the MAV Plus Series has the features and capabilities to streamline integration and operations in any A/V signal routing environment.

MAV Plus Series matrix switchers are ideal for a very broad range of video and audio routing applications, including command and control centers, university classroom buildings, conference centers, and auditoriums, large residential entertainment systems, and many other high level A/V system designs.

Video Features
All MAV Plus Series switchers feature 150 MHz (-3 dB) video bandwidth, ensuring superb signal quality in even the most complex high definition video system designs. MAV Plus Series switchers are quad standard for worldwide compatibility and also feature video genlock and vertical interval switching for smooth, seamless transitions when switching between synchronous video sources.

Audio Features
The MAV Plus Series includes matrix switchers, in sizes up to 64x64, that are capable of switching balanced or unbalanced mono or stereo audio signals. All audio-capable models support both audio follow and audio breakaway modes. Full adjustment of both audio input gain and attenuation, and audio output volume and muting, is available at the front panel or through IP Link® or serial control. The advanced audio capabilities of the MAV Plus Series facilitate system integration by reducing gain-staging effects and eliminating the need for audio preamplifiers in many system designs.

Control Features
Each of the MAV Plus Series models comes standard with backlit I/O selection buttons utilizing Extron's QS-FPC - QuickSwitch Front Panel Controller, which allows for simple, touch-of-a-button input and output selection directly from the front panel. In addition, the MAV Plus Series features RS-232 and RS-422 serial control capability, as well as Extron's exclusive IP Link Ethernet monitoring and control.

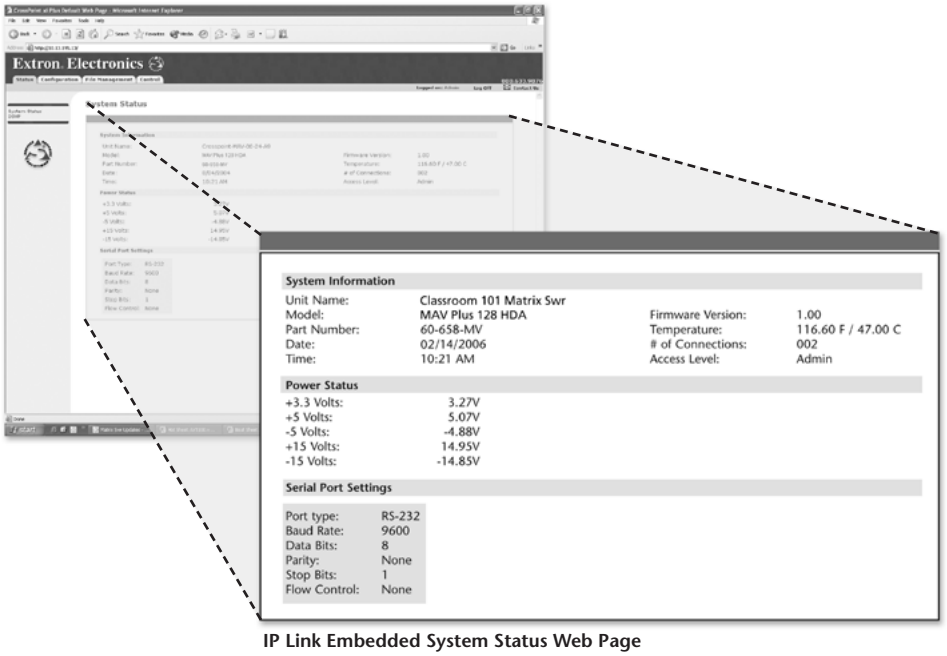
IP Link Ethernet Control
The MAV Plus Series is equipped with Extron's IP Link, an IP integration technology specifically engineered to meet the needs of professional A/V environments — from K-12 classrooms to large universities, businesses, and residential media systems.

IP Link is built around an integrated, high performance Web server that features global compatibility with industry standard Ethernet communication protocols, multi-user support, and IP Link GlobalViewer™ software. GlobalViewer, Extron's free Web-based application, enables a variety of asset management functions including proactive maintenance and remote technical support from any administrator authorized LAN, WAN, or Internet portal.

On the MAV Plus Series, IP Link provides technical support personnel with the ability to receive service and failure messages through an e-mail-enabled cell phone, PDA, pager, or e-mail account. Utilizing IP Link, the help desk can also view embedded Web pages to manage, monitor, and troubleshoot the switcher for the following:

Asset Management
- Remotely select input and output ties for audio only, video only, or audio and video
- Name and select global I/O presets
- Set audio input and output volume levels

Operating Status and Diagnostics
- Monitor primary and redundant power supply voltages
- Monitor internal product operating temperature
- Recall firmware revision and other data for improved help desk support
- Obtain immediate notification via e-mail for critical service information
- Upload firmware updates



IP Link Embedded System Status Web Page

- **150 MHz (-3 dB) video bandwidth** – Ensures switching and distribution of signals without degradation. MAV Plus Series matrix switchers provide at least 150 MHz (-3 dB) video bandwidth at full performance capacity when one input signal drives all outputs.
- **Quad standard** – Capable of switching NTSC 3.58, NTSC 4.43, PAL, and SECAM video for worldwide compatibility.
- **Video genlock** – Allows for vertical interval switching and enables smooth, seamless transitions when switching between synchronous video sources.
- **Tri-color, backlit buttons** – Can be custom-labeled for easy identification. Buttons illuminate red, green, or amber, depending on function, for ease-of-use in low-light environments.
- **Enhanced QS-FPC™ - QuickSwitch Front Panel Controller** – Provides a discrete, backlit button for each input and output, allowing for simple, intuitive operation.
- **Global presets** – Frequently used I/O configurations may be saved and recalled either from the QuickSwitch Front Panel Controller or RS-232 serial control. This time-saving feature allows you to set up I/O configurations and store them in memory for future use.
- **I/O grouping** – Allows the matrix to be virtually divided into smaller sub-switchers, making installation and control easier. I/O grouping allows specific outputs, like those designated for a specific video format, to be grouped together.
- **Rooming** – All models can be programmed to group selected outputs into specific "rooms," each with its own set of unique presets. Each room can support up to 16 outputs. A total of 10 rooms, with 10 presets per room, are available.
- **View I/O mode** – Allows users to easily see which individual inputs and outputs are actively connected. Available from the front panel, RS-232, or via IP Link control.
- **Balanced and unbalanced stereo audio** – Accepts both balanced and unbalanced stereo audio signals on captive screw connectors. The MAV Plus 128 AV RCA accepts unbalanced stereo audio on RCA connectors.
- **Audio input gain and attenuation** – Allows installers to set the level of gain or attenuation for each audio input channel, eliminating noticeable differences in volume when switching between sources.
- **Audio output volume adjustment and muting** – Each individual output has volume control adjustment via the front panel, RS-232 or IP Link control. Audio output levels can be set dynamically at different levels to feed the audio amplifier, thus eliminating the need for a preamplifier in many system designs.
- **Audio breakaway** – Provides the capability to break an audio signal away from its corresponding video signal, allowing the audio channels to be operated as a separate matrix switcher.
- **IP Link®** – Engineered to meet the needs of professional A/V environments, IP Link enables the MAV Plus Series to be proactively monitored and managed over a LAN, WAN, or the Internet, using standard TCP/IP protocols. IP Link provides for remote selection of input and output ties, adjustment and control of audio input and output levels, and advanced system diagnostics.
- **IP Link Enhanced Diagnostics** – Provides for monitoring of internal product operating temperature and power supply voltages, e-mail notification of input signal loss, and other critical service information.
- **RS-232 and RS-422 control port** – Using RS-232 or RS-422 serial commands, the MAV Plus Series can be controlled and configured via the Extron Windows®-based control program, or integrated into third-party control systems. Extron products use the Simple Instruction Set (SIS™) command protocol, a set of basic ASCII code commands that allow for quick and easy programming. The serial port also makes it easy to install firmware updates.
- **Control Software** – Provides a graphical, drag-and-drop interface for I/O configuration and other customization functions via RS-232 or RS-422 remote control. This software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may be saved for future downloading to the matrix switcher.
- **Optional control panels and keypads** – Provide the flexibility to control a MAV Plus Series matrix switcher from a remote location.

MKP 2000
X-Y Remote Control Panel

MKP 3000
X-Y Remote Control Panel with LCD Display

MCP 1000
Control Panel

- **Front panel security lockout** – Prevents unauthorized use when the matrix switcher is installed in an unsecured environment where easy access is not desirable. In lock out mode, a special button combination is required to operate the front panel.
- **Internal international power supply** – For worldwide compatibility, all models are equipped with an internal, autoswitching power supply that meets or exceeds all appropriate safety certifications.
- **Redundant power supplies** – Exclusive to 24x12 through 64x64 models - Primary and back-up power supplies are internally mounted and configured to automatically switch over to a spare hot power supply if the primary power supply fails. This means no loss of functionality in the event of a primary power supply malfunction.

MAV PLUS MODELS

MAV Plus 1212 AV
Composite Video & Audio Matrix Switcher

MAV Plus 6464 V
Composite Video Matrix Switcher

MAV Plus 6464 AV
Composite video & Audio Matrix Switcher

MAV Plus 816 SVA
S-video & Audio Matrix Switcher

Composite Video Matrix Switchers

Composite Video Matrix Switchers

Model	Size	Part Number
MAV Plus 88 V	8x8	60-658EZ
MAV Plus 128 V	12x8	60-658KZ
MAV Plus 816 V	8x16	60-659-12
MAV Plus 168 V	16x8	60-329-12
MAV Plus 1616 V	16x16	60-240-12
MAV Plus 2412 V	24x12	60-474-02
MAV Plus 2424 V	24x24	60-472-02
MAV Plus 3216 V	32x16	60-475-02
MAV Plus 3232 V	32x32	60-473-02
MAV Plus 3248 V*	32x48	60-761-31
MAV Plus 3264 V*	32x64	60-762-31
MAV Plus 4832 V*	48x32	60-763-31
MAV Plus 4848 V*	48x48	60-764-31
MAV Plus 4864 V*	48x64	60-765-31
MAV Plus 6432 V*	64x32	60-766-31
MAV Plus 6448 V*	64x48	60-767-31
MAV Plus 6464 V*	64x64	60-768-31

Composite Video & Stereo Audio Matrix Switchers

MAV Plus 88 AV	8x8	60-658EX
MAV Plus 128 AV	12x8	60-658KV
MAV Plus 128 AV RCA	12x8	60-238-14
MAV Plus 1212 AV	12x12	60-853-11
MAV Plus 816 AV	8x16	60-659-11
MAV Plus 168 AV	16x8	60-329-11
MAV Plus 1616 AV	16x16	60-240-11
MAV Plus 2412AV	24x12	60-474-01
MAV Plus 2424AV	24x24	60-472-01
MAV Plus 3216 AV	32x16	60-475-01
MAV Plus 3232 AV	32x32	60-473-01
MAV Plus 3248 AV*	32x48	42-078-15
MAV Plus 3264 AV*	32x64	42-079-15
MAV Plus 4832 AV*	48x32	42-080-15
MAV Plus 4848 AV*	48x48	42-081-15
MAV Plus 4864 AV*	48x64	42-082-15
MAV Plus 6432 AV*	64x32	42-083-15
MAV Plus 6448 AV*	64x48	42-084-15
MAV Plus 6464 AV*	64x64	42-085-15

*** MAV Plus 32x48 and larger matrix switcher models may be stacked to create Y/C and YUV/RGsB capable switchers**

S-Video Matrix Switchers

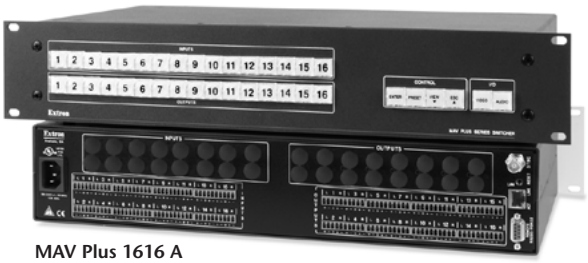
S-Video Matrix Switchers

Model	Size	Part Number
MAV Plus 88 SV	8x8	60-658FZ
MAV Plus 128 SV	12x8	60-658LZ
MAV Plus 816 SV	8x16	60-660-12
MAV Plus 168 SV	16x8	60-364-12
MAV Plus 1616 SV	16x16	60-365-12
MAV Plus 2412 SV	24x12	60-474-22
MAV Plus 2424 SV	24x24	60-472-22
MAV Plus 3216 SV	32x16	60-475-22
MAV Plus 3232 SV	32x32	60-473-22

S-Video & Stereo Audio Matrix Switchers

MAV Plus 88 SVA	8x8	60-658FX
MAV Plus 128 SVA	12x8	60-658LV
MAV Plus 816 SVA	8x16	60-660-11
MAV Plus 168 SVA	16x8	60-364-11
MAV Plus 1616 SVA	16x16	60-365-11
MAV Plus 2412 SVA	24x12	60-474-21
MAV Plus 2424 SVA	24x24	60-472-21
MAV Plus 3216 SVA	32x16	60-475-21
MAV Plus 3232 SVA	32x32	60-473-21

MAV Plus 168 HDA
HDTV/Component Video & Audio Matrix Switcher



MAV Plus 1616 A
Stereo Audio Matrix Switcher

MAV Plus 6464 A
Mono Audio Matrix Switcher

HDTV/Component Video Matrix Switchers

HDTV/Component Video Matrix Switchers

Model	Size	Part Number
MAV Plus 88 HD	8x8	60-658GZ
MAV Plus 128 HD	12x8	60-658MZ
MAV Plus 816 HD	8x16	60-661-12
MAV Plus 168 HD	16x8	60-366-12
MAV Plus 1616 HD	16x16	60-367-12

HDTV/Component Video & Stereo Audio Matrix Switchers

MAV Plus 88 HDA	8x8	60-658GX
MAV Plus 128 HDA	12x8	60-658MV
MAV Plus 816 HDA	8x16	60-661-11
MAV Plus 168 HDA	16x8	60-366-11
MAV Plus 1616 HDA	16x16	60-367-11

Stereo Audio Matrix Switchers

Balanced or Unbalanced Stereo Audio Matrix Switchers

Model	Size	Part Number
MAV Plus 88 A	8x8	60-658AX
MAV Plus 128 A	12x8	60-658AV
MAV Plus 816 A	8x16	60-659-13
MAV Plus 164 A	16x4	60-854-13
MAV Plus 168 A	16x8	60-329-13
MAV Plus 1616 A	16x16	60-240-13
MAV Plus 2412 A	24x12	60-474-03
MAV Plus 2424 A	24x24	60-472-03
MAV Plus 3216 A	32x16	60-475-03
MAV Plus 3232 A	32x32	60-473-03
MAV Plus 3248 A*	32x48	60-761-15
MAV Plus 3264 A*	32x64	60-762-15
MAV Plus 4832 A*	48x32	60-763-15
MAV Plus 4848 A*	48x48	60-764-15
MAV Plus 4864 A*	48x64	60-765-15
MAV Plus 6432 A*	64x32	60-766-15
MAV Plus 6448 A*	64x48	60-767-15
MAV Plus 6464 A*	64x64	60-768-15

Mono Audio Matrix Switchers

Balanced or Unbalanced Mono Audio Matrix Switchers

Model	Size	Part Number
MAV Plus 3248 AM*	32x48	60-761-10
MAV Plus 3264 AM*	32x64	60-762-10
MAV Plus 4832 AM*	48x32	60-763-10
MAV Plus 4848 AM*	48x48	60-764-10
MAV Plus 4864 AM*	48x64	60-765-10
MAV Plus 6432 AM*	64x32	60-766-10
MAV Plus 6448 AM*	64x48	60-767-10
MAV Plus 6464 AM*	64x64	60-768-10

***NOTE**: Does not include a QuickSwitch Front Panel Controller – QS-FPC

SPECIFICATIONS – 8x4 to 32x32

VIDEO – VIDEO MODELS

Gain ..... Unity
Bandwidth ..... 150 MHz (-3 dB), fully loaded
0 - 10 MHz: no more than +0.1 dB to -0.1 dB
0 - 30 MHz: no more than +0.1 dB to -0.5 dB
Phase between I/Os ..... <1.28° at 3.58 MHz
Differential phase error ..... 1.0° at 3.58 MHz and 4.43 MHz
Differential gain error ..... 1.0% at 3.58 MHz and 4.43 MHz
Crosstalk ..... -50 dB @ 5 MHz
Switching speed ..... 200 ns (max.)

VIDEO INPUT

Number/signal type
MAV Plus 88/816 Series ..... 8 RGsB, RsGsBs, HDTV, component video, S-video, composite video
MAV Plus 128 Series ..... 12 RGsB, RsGsBs, HDTV, component video, S-video, composite video
MAV Plus 1212/168/1616 Series ..... 12 or 16 RGsB, RsGsBs, HDTV, component video, S-video, or composite video
MAV Plus 24 Series ..... 24 S-video, composite video
MAV Plus 32 Series ..... 32 S-video, composite video
Connectors
Composite video models ..... 1x 8, 12, 16, 24, or 32 BNC female
S-video models ..... 2x 8, 12, 16, 24, or 32 BNC female
HDTV/Component video models ..... 3x 8, 12, or 16 BNC female
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
Min./max. levels ..... Analog: 0.5 V to 2.0 Vp-p with no offset
Impedance ..... 75 ohms
Return loss ..... <-30 dB @ 5 MHz
DC offset (max. allowable) ..... 1.5 V
External sync (genlock) ..... 0.3 V to 0.4 Vp-p

VIDEO OUTPUT

Number/signal type
MAV Plus 88/816 Series ..... 8 or 16 RGsB, RsGsBs, HDTV, component video, S-video, composite video
MAV Plus 128 Series ..... 8 RGsB, RsGsBs, HDTV, component video, S-video, composite video
MAV Plus 1212/168/1616 Series ..... 8, 12 or 16 RGsB, RsGsBs, HDTV, component video, S-video, or composite video
MAV Plus 24 Series ..... 12 or 24 S-video, composite video
MAV Plus 32 Series ..... 16 or 32 S-video, composite video
Connectors
Composite video models ..... 1x 8, 12, 16, 24, or 32 BNC female
S-video models ..... 2x 8, 12, 16, 24, or 32 BNC female
HDTV/Component video models ..... 3x 8, 12, or 16 BNC female
Nominal level ..... 1 V p-p for Y of component video and S-video, and for composite video 0.7 V p-p for RGB
0.3 V p-p for R-Y and B-Y of component video, and for C of S-video
Min./max. levels ..... 0.5 V to 2.0 V p-p (follows input)
Impedance ..... 75 ohms
Return loss ..... <-30 dB @ 5 MHz
DC offset ..... ±5 mV with input at 0 offset
Switching type ..... Vertical interval

SYNC

Standards ..... NTSC 3.58, NTSC 4.43, PAL, SECAM
Genlock connector ..... 1 BNC female
Input level ..... 1.9 V to 5.0 V p-p
Output level ..... 4.0 V to 5.0 V p-p, unterminated
Impedance ..... 75 ohms
Max input voltage ..... 5.0V p-p
Max. propagation delay ..... 30 ns
Max. rise/fall time ..... 4.2 ns

AUDIO — AUDIO MODELS

Gain ..... Unbal. output: -6 dB; bal. output 0 dB
Frequency response ..... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise ..... 0.03% @ 1 kHz at nominal level
S/N ..... >90 dB, bal., at max. output (21 dBu), unweighted
Crosstalk ..... <-80 dB @ 1 kHz, fully loaded
Stereo channel separation ..... >80 dB @ 1 kHz
CMRR ..... >75 dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type
MAV Plus 128 AV RCA ..... 12 stereo, unbal.
All other models ..... 8, 12, 16, 24, or 32 stereo, bal./unbal.
Connectors
MAV Plus 128 AV RCA ..... 12 pairs of RCA connectors
All other models ..... (8, 12, 16, 24, or 32) 3.5 mm captive screw connectors, 5 pole
Impedance ..... >10k ohm, bal./unbal., DC coupled
Nominal level
MAV Plus 2412/2424/3216/3232 Series ..... -10 dBV (316 mV)
All other models ..... -10 dBV (316 mV), 0 dBu (775 mV)
Max. level ..... +19.5 dBu, (bal. or unbal.) at 1%THD+N
Input gain adjustment ..... -18 dB to +24 dB, adjustable per input by RS-232/422 or front panel or by Ethernet
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO OUTPUT

Number/signal type
MAV Plus 128 AV RCA ..... 8 stereo, unbal.
All other models ..... 4, 8, 12, 16, 24, or 32 stereo, bal./unbal.
Connectors
MAV Plus 128 AV RCA ..... 8 pairs of RCA connectors
All other models ..... (4, 8, 12, 16, 24, or 32) 3.5 mm captive screw connectors, 5 pole
Impedance ..... 50 ohms unbal., 100 ohms bal.
Gain error ..... ±0.1 dB channel to channel
Max. level (Hi-Z) ..... >+21 dBu, bal. or unbal. at 0.10% THD+N
Max. level (600 ohm) ..... >+15 dBm, bal. or unbal. at 0.10% THD+N
Output volume range ..... 0 to 64 (-98 dB to 0 dB) in 1 dB increments

CONTROL/REMOTE — SWITCHER

Global Presets
MAV Plus 88/816/128/164/1212/168/1616 32
MAV Plus 2412/2424/3216/3232 132
Serial control port ..... 1 RS-232/RS-422, 9-pin female D-sub
Baud rate and protocol ..... 9600 (default) 8 data bits, 1 stop bit, no parity
Serial control pin configurations ..... RS-232: 2 = TX, 3 = RX, 5 = GND
RS-422: 1 = Tx+, 2 = TX-, 3 = RX+, 4 = RX-, 5 = GND
Ethernet control port ..... 1 RJ-45 female connector
Ethernet data rate ..... 10/100Base-T, half/full duplex 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 (autoswitchable)
MAV Plus 88/128 Series ..... 30 watts
MAV Plus 816/164/168/1212/1616 Series ..... 36 watts
MAV Plus 2412/2424 Series ..... 2 (primary and redundant), 100 watts
MAV Plus 3216/3232 Series ..... 2 (primary and redundant), 120 watts
MAV Plus 2412/2424/3216/3232 S-video Series ..... 2 (primary and redundant), 150 watts
Rack mount ..... Yes
Enclosure type ..... Metal
Enclosure dimensions (Depth excludes connectors and controls. Width excludes rack ears.)
All Models ..... Full rack width
MAV Plus 88/128 Series (all) and 816/164/168/1212/1616 Composite Video Series and Stereo Audio Series ..... 3.5" H x 17.0" W x 9.4" D (2U high, 8.9 cm H x 43.2 cm W x 23.9 cm D
MAV 816/168/1616 S-video Series with and without audio ..... 5.25" H x 17.0" W x 9.4" D (3U high, 13.3 cm H x 43.2 cm W x 23.9 cm D
MAV 816/168/1616 Component Video Series with and without audio ..... 7.0" H x 17.0" W x 9.7" D (4U high, 17.8 cm H x 43.2 cm W x 24.6 cm D
MAV Plus 24/32 Series composite video models with and without audio and S-video models ..... 8.75" H x 17.0" W x 12.25" D (5U high) 22.2 cm H x 43.2 cm W x 31.1 cm D
MAV Plus 24/32 Series S-video with audio ..... 14.0" H x 17.0" W x 12.25" D (8U high) 35.6 cm H x 43.2 cm W x 31.1 cm D
NOTE: (Depth excludes connectors and controls. Width excludes rack ears.)
Product weight/shipping weight
MAV Plus 2U models ..... 9.4 lbs. (4.3 kg)/15 lbs. (7 kg)
MAV Plus 3U models ..... 11.9 lbs. (5.4 kg)/18 lbs. (9 kg)
MAV Plus 4U models ..... 14.4 lbs. (6.5 kg)/22 lbs. (10 kg)
MAV Plus 5U models ..... 19.4 lbs. (8.8 kg)/26 lbs. (12 kg)
MAV Plus 8U models ..... 29 lbs. (14 kg)
DIM weight
2U, 3U, and 4U models ..... 25 lbs. (12 kg)
5U models ..... 31 lbs. (12 kg)
Listings ..... UL, CUL
Compliances ..... CE, FCC Class A, VCCI, AS/NZS, ICES

VIDEO

Routing	
3248 Series	32x48 matrix
3264 Series	32x64 matrix
4832 Series	48x32 matrix
4848 Series	48x48 matrix
4864 Series	48x64 matrix
6432 Series	64x32 matrix
6448 Series	64x48 matrix
6464 Series	64x64 matrix
Gain	unity
Bandwidth	150 MHz (-3dB), fully loaded 0 - 10 MHz: no more than +0.10 dB to -0.10 dB 0 - 130 MHz: no more than +1.0 dB to -1.0 dB
Crosstalk	-80dB @1 MHz, -62 dB @ 10MHz, -52dB@ 30MHz
Switching speed	200 ns (max)

VIDEO INPUT

Number/signal type	32, 48, or 64 composite video
Connectors	32, 48, or 64 BNC female
Nominal level	1V p-p for composite video
Minimum/maximum levels	Analog: 0.5V to 2.0V p-p, no offset
Impedance	75 ohms
Return loss	30dB @ 5 MHz
Maximum DC offset	1.5V

VIDEO OUTPUT

Number/signal type	32, 48, or 64 composite video
Connectors	32, 48, or 64 BNC female
Nominal level	1V p-p for composite video
Minimum/maximum level	2V p-p
Impedance	75 ohms
Return loss	-30 dB @ 5 MHz
DC offset	±5mV with input at 0 offset

SYNC

Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Genlock connector	1 BNC female
Input level	1.9 V to 5.0 V p-p
Output level	4.0 V to 5.0 V p-p, unterminated
Impedance	75 ohms
Max input voltage	5.0 V p-p
Max propagation delay	30 ns
Max rise/fall time	4.2 ns

AUDIO — AUDIO MODELS ONLY

Routing	32, 48, 64 stereo (or) 32x 48, or 64 mono
Gain	Unbalanced output: -6 dB Balanced output: 0 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 1 kHz at nominal level
S/N	>90 dB, balanced, at max. output (21 dBu), unweighted
Crosstalk	<-80 dB @ 1 kHz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

AUDIO INPUT — AUDIO MODELS ONLY

Number/signal type	32, 48, or 64 stereo (or) 32, 48, or 64 mono
Connectors	(32, 48, 64) 3.5 mm captive screw connectors, 5 pole (stereo models only) (32, 48, 64) 3.5 mm captive screw connectors, 3 pole (mono models only)
Impedance	>10 Kohm, balanced/unbalanced, DC coupled
Nominal level	-10dBV (316mV)
Maximum level	+19.5 dBu, (balanced or unbalanced) at 0.01%THD+N
Input gain adjustment	-18 dB to +24 dB, adjustable per input by RS-232/422, Ethernet, or FPC

AUDIO OUTPUT — AUDIO MODELS ONLY

Number/signal type	32, 48, or 64 stereo
Connectors	(32, 48, 64) 3.5 mm captive screw connectors, 5 pole (stereo models only) (32, 48, 64) 3.5 mm captive screw connectors, 3 pole (mono models only)
Impedance	50 ohms unbalanced 100 ohms balanced
Gain error	±0.1 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu, balanced or unbalanced at 0.10%THD+N
Maximum level (600 ohm)	>+15 dBm, balanced or unbalanced at 0.10%THD+N 0 dBu = 0.775 volts (RMS).
Output volume range	0 to 64 (-98 dB to 0 dB) in 1/2 dB increments from steps 1 to 64, 35 dB increment from step 0 to 1

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

CONTROL/REMOTE — SWITCHER

Global presets	64 (plus 100 room presets)
Serial control port	(1) RS-232 or RS-422, 9-pin female D
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin Config	RS-232 -- 2 = TX, 3 = RX, 5 = GND RS-422 -- 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = TX+
Ethernet control port	(1) RJ-45 female connector
Ethernet data rate	10/100Base-T
Ethernet protocol	ARP, ICMP (ping), TCP/IP, Telnet, HTTP
Program control	Extron's control program for Windows® Extron's Simple Instruction Set(SIS™) Microsoft Explorer, Telnet

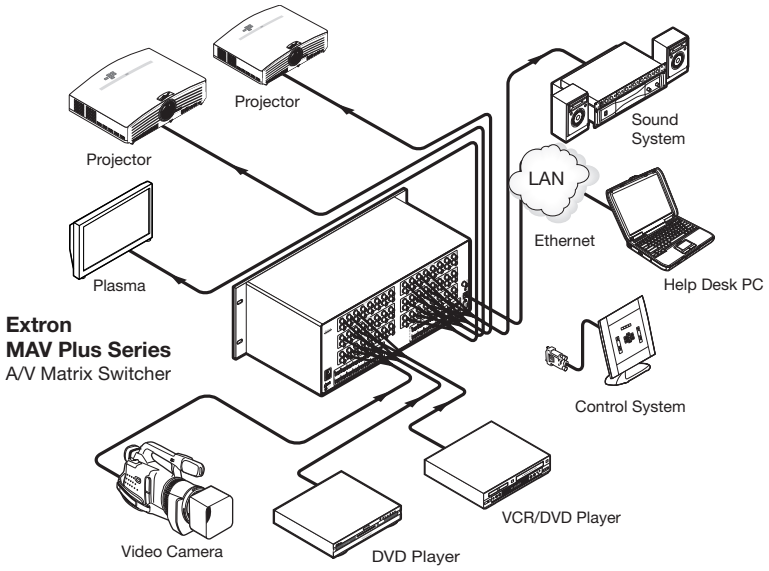
GENERAL

Power	100VAC to 240VAC, 50/60 Hz, internal, Auto-switchable
64x Series video	110 watts at 115VAC, 60Hz
48x Series video	110 watts at 115VAC, 60Hz
32x Series video	50 watts at 115VAC, 60Hz
64x Series sync	65 watts at 115VAC, 60Hz
48x Series sync	65 watts at 115VAC, 60Hz
32x Series sync	35 watts at 115VAC, 60Hz
All audio models	195 watts at 115VAC, 60hZ
Temperature/humidity	
Storage	-40° to +158°F (-40° to +70°C) 10% to 90%, non-condensing
Operating	+32° to +104°F (0° to +40°C) 10% to 90%, non-condensing
Rack mount	Yes, with included parts
Enclosure	Metal
Enclosure dimensions	
Per signal	10.50" H x 17.0" W x 14.1" D (6-U high, full rack width)
Product weight	
Per signal	64 and 48 Series: 41 lbs (18.5 kg) 32 Series: 31 lbs (14.0 kg)
DIM weight	
Per signal All models	44 lbs
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF	30,000 hours
Warranty	3 years parts and labor

MAV FAMILY COMPARISON CHART

	Features	MAV Series	MAV Plus Series
Video Features	Bandwidth (fully loaded)	150 MHz (-3 dB)	150 MHz (-3 dB)
	Input/output size range	4x4 to 8x8	8x8 to 64x64
	Composite Video	✓	✓
	S-video (4-pin DIN)	✓	
	S-video (Y/C)		✓
	Component Video (Y, R-Y, B-Y)		✓
	HDTV (Y, Pb, Pr)		✓
	RGsB		✓
Audio Features	Stereo Audio only Matrix Switchers		✓
	Mono Audio only Matrix Switchers		✓
	Balanced/unbalanced stereo audio	✓	✓
	Audio input gain & attenuation	✓	✓
	Audio output volume control		✓
Control Features	QuickSwitch front panel controller (QS-FPC)	✓	
	Enhanced QS-FPC with tri-color backlit I/O buttons		✓
	Global memory presets	✓ (16)	✓ (32 to 64)
	IR remote control (optional)	✓	
	RS-232 serial control	✓	
	RS-232/422 serial control		✓
	IP Link® Ethernet monitoring and control		✓

APPLICATION DRAWING



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