

# Specifications — MAV Plus Series

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## Video — video models

Routing .....	MAV Plus 88 Series: 8 x 8 matrix MAV Plus 816 Series: 8 x 16 matrix MAV Plus 128 Series: 12 x 8 matrix MAV Plus 168 Series: 16 x 8 matrix MAV Plus 1616 Series: 16 x 16 matrix MAV Plus 2412 Series: 24 x 12 matrix MAV Plus 2424 Series: 24 x 24 matrix MAV Plus 3216 Series: 32 x 16 matrix MAV Plus 3232 Series: 32 x 32 matrix
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 (MAV Plus 2412, MAV Plus 2424, MAV Plus 3216, MAV Plus 3232 Series)	<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 — video models

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 168/1616 Series	16 RGSB, RsGsBs, HDTV, component video, S-video, composite video
MAV Plus 2412/2424 Series	composite video models 24 composite video
MAV Plus 2412/2424 Series	S-video models 24 S-video, composite video
MAV Plus 3216/3232 Series	composite video models 32 composite video
MAV Plus 3216/3232 Series	S-video models 32 S-video, composite video
Connectors	
MAV Plus 88/816 Series .	8 x 3 BNC female for RGB/HDTV/component video, 8 x 2 BNC female for S-video, 8 BNC female for composite video
MAV Plus 128 Series .....	12 x 3 BNC female for RGB/HDTV/component video, 12 x 2 BNC female for S-video, 12 BNC female for composite video
MAV Plus 168/1616 Series	16 x 3 BNC female for RGB/HDTV/component video, 16 x 2 BNC female for S-video, 16 BNC female for composite video
MAV Plus 2412/2424 Series	composite video models 24 BNC female
MAV Plus 2412/2424 Series	S-video models 24 x 2 BNC female
MAV Plus 3216/3232 Series	composite video models 32 BNC female
MAV Plus 3216/3232 Series	S-video models 32 x 2 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
Minimum/maximum 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 V <sub>p-p</sub>

## Video output — video models

Number/signal type	
MAV Plus 2412/2424/3216/3232 Series composite video models	12, 16, 24, or 32 composite video
MAV Plus 2412/2424/3216/3232 Series S-video models	12, 16, 24, or 32 S-video
All other models .....	8. or 16 RGBs, RsGsBs, HDTV, component video, S-video, composite video (follows input type)
Connectors	
MAV Plus 128/168 Series	8 x 3 BNC female for RGB/HDTV/component video, 8 x 2 BNC female for S-video, 8 BNC female for composite video
MAV Plus 2412 Series .....	12 BNC female for composite video
MAV Plus 816/1616 Series	16 x 3 BNC female for RGB/HDTV/component video, 16 x 2 BNC female for S-video, 16 BNC female for composite video
MAV Plus 3216 Series .....	16 BNC female for composite video <i>or</i> 32 BNC female for S-video
MAV Plus 2424 Series .....	24 BNC female for composite video <i>or</i> 48 BNC female for S-video
MAV Plus 3232 Series .....	32 BNC female for composite video <i>or</i> 64 BNC female for S-video
Nominal level .....	1 V <sub>p-p</sub> for Y of component video and S-video, and for composite video 0.7 V <sub>p-p</sub> for RGB 0.3 V <sub>p-p</sub> for R-Y and B-Y of component video, and for C of S-video
Minimum/maximum levels .....	0.5 V to 2.0 V <sub>p-p</sub> (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 — MAV Plus 88/128/168/816/1616 video models

Genlock connectors .....	1 BNC female
Standards .....	NTSC 3.58, NTSC 4.43, PAL, SECAM

## Sync — MAV Plus 2412/2424/3216/3232 video models

Standards .....	NTSC 3.58, NTSC 4.43, PAL, SECAM
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## Audio — audio models

Routing .....	MAV Plus 88 Series: 8 x 8 stereo matrix MAV Plus 816 Series: 8 x 16 stereo matrix MAV Plus 128 Series: 12 x 8 stereo matrix MAV Plus 168 Series: 16 x 8 stereo matrix MAV Plus 1616 Series: 16 x 16 stereo matrix MAV Plus 2412 Series: 24 x 12 stereo matrix MAV Plus 2424 Series: 24 x 24 stereo matrix MAV Plus 3216 Series: 32 x 16 stereo matrix MAV Plus 3232 Series: 32 x 32 stereo matrix
Gain	
MAV Plus 128 AV RCA ..	Unbalanced output: 0 dB
All other models .....	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 maximum output (21 dBu), unweighted
Crosstalk .....	<-80 dB @ 1 kHz, fully loaded

# Specifications — MAV Plus Series (continued)

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Stereo channel separation ..... >80 dB @ 1 kHz  
CMRR ..... >75 dB @ 20 Hz to 20 kHz

## Audio input — audio models only

Number/signal type  
MAV Plus 128 AV RCA .. 12 stereo, unbalanced  
All other models ..... 8, 12, 16, 24, or 32 stereo, balanced/unbalanced

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, balanced/unbalanced, DC coupled

Nominal level  
MAV Plus 2412/2424/3216/3232 Series  
-10 dBV (316 mV)  
All other models ..... 0.1 dBu (775 mV)

Maximum level ..... +19.5 dBu, (balanced or unbalanced) 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**  $0 \text{ dBu} = 0.775 \text{ V}_{\text{rms}}$ ,  $0 \text{ dBV} = 1 \text{ V}_{\text{rms}}$ ,  $0 \text{ dBV} \approx 2 \text{ dBu}$

## Audio output — audio models

Number/signal type  
MAV Plus 128 AV RCA .. 8 stereo, unbalanced  
All other models ..... 8, 12, 16, 24, or 32 stereo, balanced/unbalanced

Connectors  
MAV Plus 128 AV RCA .. 8 pairs of RCA connectors  
All other models ..... (8, 12, 16, 24, or 32) 3.5 mm captive screw connectors, 5 pole

Impedance ..... 50 ohms unbalanced, 100 ohms balanced

Gain error .....  $\pm 0.1$  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

Output volume range ..... 0 to 64 (-98 dB to 0 dB) in 1 dB increments from steps 1 to 64, 35 dB increment from step 0 to 1

## Control/remote — switcher

Serial control port ..... 1 RS-232 or RS-422, 9-pin female D connector

Baud rate and protocol ..... 9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity

Serial control pin configurations  
RS-232 (all models) ..... 2 = TX, 3 = RX, 5 = GND  
RS-422 (MAV Plus 2412, 2424, 3216, 3232 Series)  
1 = Tx+, 2 = Tx-, 3 = Rx+, 4 = Rx-, 5 = Gnd  
RS-422 (all other MAV Plus models)  
2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+

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

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## General

Power .....	100 VAC to 240 VAC, 50/60 Hz, internal, autoswitchable MAV Plus 88/128 Series: 30 watts MAV Plus 816/168/1616 Series: 48 watts MAV Plus 2412/2424 Series video models: 2 (primary and redundant), 100 watts MAV Plus 3216/3232 Series video models: 2 (primary and redundant), 120 watts MAV Plus 2412/2424/3216/3232 Series S-video models: 2 (primary and redundant), 150 watts
Temperature/humidity .....	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +113 °F (0 to +45 °C) / 10% to 90%, noncondensing
Rack mount .....	Yes
Enclosure type .....	Metal
Enclosure dimensions (Depth excludes connectors and controls. Width excludes rack ears.)	
MAV Plus 88/128 Series (all) and 816/168/1616 Composite Video Series and Stereo Audio Series	3.5" H x 17.0" W x 9.4" D (2U high, full rack wide) 8.9 cm H x 43.2 cm W x 23.9 cm D
MAV Plus 816/168/1616 S-video Series with and without audio	5.25" H x 17.0" W x 9.4" D (3U high, full rack wide) 13.3 cm H x 43.2 cm W x 23.9 cm D
MAV Plus 816/168/1616 Component Video Series with and without audio	7.0" H x 17.0" W x 9.7" D (4U high, full rack wide) 17.8 cm H x 43.2 cm W x 24.6 cm D
MAV Plus 2412/2424/3216/3232 Series composite video and S-video models	8.75" H x 17.0" W x 12.25" D (5U high, full rack wide) 22.2 cm H x 43.2 cm W x 31.1 cm D
MAV Plus 3232 SVA models	14.0" H x 17.0" W x 12.25" D (8U high, full rack wide) 35.6 cm H x 43.2 cm W x 31.1 cm D
Product weight/shipping weight	
MAV Plus 88/128 Composite Video Series with and without audio (2U enclosures)	8.9 lbs (4.0 kg)/15 lbs (7 kg)
All other MAV Plus 84/88/124/128 models (2U enclosures)	9.4 lbs (4.3 kg)/15 lbs (7 kg)
MAV Plus 816/168/1616 S-video Series with and without audio (3U enclosures)	11.9 lbs (5.4 kg)/18 lbs (9 kg)
MAV Plus 816/168/1616 Component Video Series with and without audio (4U enclosures)	14.4 lbs (6.5 kg)/22 lbs (10 kg)
MAV Plus 2412 Series .....	18.4 lbs (8.3 kg)/28 lbs (13 kg)
MAV Plus 3216 Series .....	18.9 lbs (8.6 kg)/28 lbs (13 kg)
MAV Plus 2424 Series .....	19.1 lbs (8.7 kg)/29 lbs (14 kg)
MAV Plus 3232 Series .....	19.8 lbs (9.0 kg)/29 lbs (14 kg)
DIM weight (2U, 3U, and 4U models)	
International .....	25 lbs (12 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
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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