

# Specifications — MAV Plus Series

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## Video — video models

### Routing

88 Series .....	8 x 8 matrix
816 Series .....	8 x 16 matrix
128 Series .....	12 x 8 matrix
1212 Series .....	12 x 12 matrix
168 Series .....	16 x 8 matrix
1616 Series .....	16 x 16 matrix
2412 Series .....	24 x 12 matrix
2424 Series .....	24 x 24 matrix
3216 Series .....	32 x 16 matrix
3232 Series .....	32 x 32 matrix

Gain..... Unity

Bandwidth.....	150 MHz (-3 dB), fully loaded
0 MHz to 10 MHz.....	No more than +0.1 dB to -0.1 dB
0 - 130 MHz .....	No more than +0.1 dB to -0.5 dB

### Phase between I/Os

2412/2424/3216/3232 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

88/816 Series.....	8 RGsB, RsGsBs, HDTV, component video, S-video, composite video
128 Series .....	12 RGsB, RsGsBs, HDTV, component video, S-video, composite video
168/1616 Series.....	16 RGsB, RsGsBs, HDTV, component video, S-video, composite video
1212 Series composite video models	12 composite video
2412/2424 Series composite video models	24 composite video
2412/2424 Series S-video models	24 S-video, composite video
3216/3232 Series composite video models	32 composite video
3216/3232 Series S-video models	32 S-video, composite video

### Connectors

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
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
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
1212 Series composite video models	12 BNC female
2412/2424 Series composite video models	24 BNC female
2412/2424 Series S-video models	24 x 2 BNC female

## Specifications — MAV Plus Series, cont'd

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3216/3232 Series composite video models	32 BNC female
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 and for R-Y and B-Y of component video 0.3 Vp-p 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 Vp-p

### Video output — video models

Number/signal type	
1212/2412/2424/3216/3232 Series composite video models	12, 16, 24, or 32 composite video
1212/2412/2424/3216/3232 Series S-video models	12, 16, 24, or 32 S-video
All other models.....	8 or 16 RGsB, RsGsBs, HDTV, component video, S-video, composite video (follows input type)
Connectors	
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
1212/2412 Series composite video models	12 BNC female for composite video
1212/2412 Series S-video models	12 BNC female for composite video <i>or</i> 24 BNC female for S-video
816/1616/3216 Series .....	16 x 3 BNC female for RGB/HDTV/component video, or 16 x 2 BNC female for S-video, or 16 BNC female for composite video
2424 Series .....	24 BNC female for composite video <i>or</i> 48 BNC female for S-video
3232 Series .....	32 BNC female for composite video <i>or</i> 64 BNC female for S-video
Nominal level .....	1 Vp-p for Y of component video and S-video, and for composite video 0.7 Vp-p for RGB and for R-Y and B-Y of component video 0.3 Vp-p for C of S-video
Minimum/maximum levels.....	0.5 V to 2.0 Vp-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 — MAV Plus 88/128/1212/168/816/1616 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

88 Series .....	8 x 8 stereo matrix
816 Series .....	8 x 16 stereo matrix
128 Series .....	12 x 8 stereo matrix
164 Series .....	16 x 4 stereo matrix
168 Series .....	16 x 8 stereo matrix
1616 Series .....	16 x 16 stereo matrix
248 A.....	24 x 8 stereo matrix
2412 Series .....	24 x 12 stereo matrix
2424 Series .....	24 x 24 stereo matrix
328 A.....	32 x 8 stereo matrix
3216 Series .....	32 x 16 stereo matrix
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, $\pm 0.05$ 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
Stereo channel separation.....	>80 dB @ 1 kHz
CMRR.....	>75 dB @ 20 Hz to 20 kHz

## Audio input — audio models

### 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, 328 A, and 248 A	-10 dBV (316 mV)
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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 (default = 0 dB), adjustable per input by RS-232/422 or front panel or by Ethernet

**NOTE** 0 dBu = 0.775 V<sub>rms</sub>, 0 dBV = 1 V<sub>rms</sub>, 0 dBV  $\approx$  2 dBu

## Audio output — audio models

### Number/signal type

MAV Plus 128 AV RCA.....	8 stereo, unbalanced
All other models.....	4, 8, 12, 16, 24, or 32 stereo, balanced/unbalanced

### 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 unbalanced, 100 ohms balanced

Gain error.....  $\pm 0.1$  dB channel to channel

# Specifications — MAV Plus Series, cont'd

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## Maximum level (Hi-Z)

MAV Plus 328 A/248 A .... Balanced: >+21 dBu at 0.10% THD+N  
Unbalanced: >+18 at 0.10% THD+N

All other models..... >+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 (-75.8 dB to 0 dB) in 1 dB increments from steps 1 to 64, 12 dB increment from step 0 to 1; default = 64 = 0 dB

## Control/remote — switcher

### Serial host control port

2412/2424/3216/3232 Series, 328 A, and 248 A

1 RS-232 or RS-422, rear panel 9-pin female D connector

All other models..... 1 bidirectional RS-232 or RS-422, rear panel 9-pin female D connector  
1 bidirectional RS-232, front panel 2.5 mm mini stereo jack

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

### Serial control pin configurations

88/816/164/168/1212/1616 Series, 328 A, and 248 A

RS-232 ..... 9-pin female D connector: 2 = Tx, 3 = Rx, 5 = GND  
Mini stereo jack: tip = Tx, ring = Rx, sleeve = GND

RS-422 ..... 2 = Tx-, 3 = Rx-, 5 = GND, 7 = Rx+, 8 = Tx+

2412/2424/3216/3232 Series, 328 A, and 248 A

RS-232 ..... 9-pin female D connector: 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 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, internal

88/128 Series..... 20 watts

816/1212/164/168/1616 Series

30 watts

2412/3216 Series video models

2 (primary and redundant), 100 watts

2424/3232 Series video models

2 (primary and redundant), 120 watts

328 A/248 A ..... 2 (primary and redundant), 48 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

### Cooling

MAV Plus 88-1616 ..... Convection, no vents

MAV Plus 2412/2424/3216/3232 Series, 328 A, and 248 A

Fan, right to left (viewed from the front panel)

Mounting..... Rack mountable

Enclosure type ..... Metal

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Enclosure dimensions.....	(Depth excludes connectors and controls. Width excludes rack ears.)
88/128 Series (all) and 816/1212/164/168/1616 Composite Video Series and/or 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
816/1212/168/1616 S-video Series with and without audio and 248 A/328 A	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
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
2412/2424/3216/3232 Composite Video Series and S-video Series	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
3232 S-Video with Audio Series	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	
88/128 Composite Video Series with and without audio (2U enclosures)	8.9 lbs (4.0 kg)/15 lbs (7 kg)
816/1212/164/168/1616 Composite Video Series and Stereo Audio Series (2U enclosures)	9.4 lbs (4.3 kg)/15 lbs (7 kg)
816/1212/168/1616 S-video Series with and without audio, 328 A, and 248 A (3U enclosures)	11.9 lbs (5.4 kg)/18 lbs (9 kg)
816/168/1616 Component Video Series with and without audio (4U enclosures)	14.4 lbs (6.5 kg)/22 lbs (10 kg)
2412 Series .....	18.4 lbs (8.3 kg)/28 lbs (13 kg)
3216 Series .....	18.9 lbs (8.6 kg)/28 lbs (13 kg)
2424 Series .....	19.1 lbs (8.7 kg)/29 lbs (14 kg)
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)
Regulatory compliance	
Safety.....	CE, c-UL, UL
EMI/EMC .....	CE, C-tick, FCC Class A, ICES, VCCI,
Warranty.....	3 years parts and labor

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

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

7.6-090309-D15-111612