

MMX VGA Series

MINI MATRIX SWITCHERS
FOR VGA AND STEREO AUDIO



MMX 32 VGA A



MMX 32 VGA MTP

The Extron MMX VGA Series consists of economical, compact VGA and stereo audio matrix switchers designed to suit the needs of small computer-video signal routing applications, such as conference rooms, classrooms and lecture halls, courtrooms, and residential gaming systems. They are ideal for use as either primary switchers or as sub-switchers in larger systems.

Common Features

- 300 MHz (-3 dB) RGB video bandwidth
- Active PC audio buffering
- Audio breakaway
- RS-232 control
- Contact closure remote control with tally output status
- Optional MMX 32 MAAP and MMX 32 AAP remote control modules
- Rack-mountable enclosure

MMX 32 VGA MTP Unique Features

- Built-in UTP transmitter drives computer-video and audio signals 300 feet (90 m) or more to a compatible MTP Series receiver
- Selectable pre-peaking



Extron® Electronics

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DESCRIPTION

The Extron **MMX VGA Series** of three input, two output matrix switchers is designed for a variety of small system computer-video and stereo audio signal routing applications, such as classrooms and training facilities, and conference rooms. Both matrix switchers include one RGBHV video output on a 15-pin HD connector and a second output in two variations. The MMX 32 VGA A features its second RGBHV output on five BNC connectors; the MMX 32 VGA MTP is equipped with a built-in Extron MTP Series twisted pair transmitter for outputting RGBHV and summed mono (L+R) audio signals. The transmitter is capable of driving UXGA (1600x1200) resolution computer-video signals 300 feet (90 m) or more over a single UTP cable.

Model	Output 1	Output 2	Ideal for
MMX 32 VGA A	Video: 15-pin HD Audio: 3.5 mm stereo jacks	RGBHV on BNC connectors Stereo audio on captive screw connectors	<ul style="list-style-type: none"> New construction High resolution signals up to 75 feet (23 m)
MMX 32 VGA MTP	Video: 15-pin HD Audio: 3.5 mm stereo jacks	RGBHV and summed mono audio on RJ-45 connector Stereo audio on captive screw connectors	<ul style="list-style-type: none"> Retrofit installations Cable runs to 300 feet (90 m) or more

Both models are compatible with high resolution computer-video signals, as well as HDTV signals with bi-level or tri-level sync, component video, S-video, composite video, and stereo audio signals. MMX Series matrix switchers can be controlled via the front panel, through RS-232, or by contact closure with the optional MMX 32 AAP and MMX 32 MAAP control modules.

FEATURES

- **300 MHz (-3 dB) RGB bandwidth** – Ensures switching and distribution of most signals without degradation. The ratings are worst-case specifications, i.e., the MMX Series provides 300 MHz (-3 dB) at full performance capacity – when one input signal drives all outputs.
- **Buffered I/O** – Each input and output is individually buffered to provide maximum performance with virtually no crosstalk.
- **Built-in UTP transmitter (MMX 32 VGA MTP only)** – Capable of driving UXGA (1600x1200) resolution computer-video and audio signals 300 feet (90 m) or more to a compatible MTP Series receiver.
- **Selectable pre-peaking (MMX 32 VGA MTP only)** – Provides additional compensation at the front end for the longest cable runs.
- **Audio breakaway via RS-232** – Provides the capability to break an audio signal away from its corresponding video signal, allowing the audio signals to be operated as a separate matrix switcher.
- **RS-232 control port** – Using RS-232 serial commands, the unit can be controlled and configured via the included Windows®-based

FEATURES (Cont.)

control software, 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 RS-232 port also makes it easy to install firmware updates.

- **Contact closure remote control with tally output status** – Allows for remote selection of an input channel, while a tally output status provides feedback to indicate which input is currently selected.
- **Optional MMX 32 AAP and MMX 32 MAAP remote control modules** – Optional control modules provide remote input selection per output. The MMX 32 AAP is a single space Architectural Adapter Plate (AAP), while the MMX 32 MAAP is a single space Mini Architectural Adapter Plate (MAAP). Both include three input selection buttons with corresponding LED indicators.



MMX 32 AAP



MMX 32 MAAP

- **Front panel security lockout** – Prevents unauthorized use in non-secure environments.
- **Downloadable firmware updates** – Updates can be easily upgraded via RS-232.
- **Rack-mountable** – 1U, half rack width metal enclosure can be rack-mounted using an optional rack shelf.
- **External international power supply** – Provides worldwide power compatibility (part # 70-055-01).

MMX 32 VGA MTP UTP DISTANCE CHART

Video Format	Pre-Peaking OFF	Pre-Peaking ON	Maximum Dist. High Quality
Composite video S-video Component video			800 feet (244 m)
640 x 480	<300 feet (90 m)	>350 feet (107 m)	700 feet (213 m)
800 x 600	<300 feet (90 m)	>350 feet (107 m)	550 feet (168 m)
1024 x 768	<300 feet (90 m)	>350 feet (107 m)	500 feet (152 m)
1280 x 1024	<250 feet (76 m)	>300 feet (90 m)	350 feet (107 m)
1600 x 1200	<250 feet (76 m)	>300 feet (90 m)	300 feet (90 m)

Optional MTP RGBHV and Audio Receivers:

Model	Version	Part Number
MTP R 15HD A	Receiver	60-670-01
MTP RL 15HD A	Receiver w/Loop-Through	60-690-01
MTP RL 15HD A SEQ	Receiver w/Loop-Through & Skew Equalizer	60-690-02

VIDEO

Routing	3 x 2 matrix
Gain	Unity
Bandwidth.....	300 MHz (-3dB), fully loaded
	0 – 10 MHz: no more than +0.1dB to -0.1dB
	0 – 130 MHz: no more than +2dB to -0.1dB
Crosstalk	-55dB @ 10 MHz, -45dB @ 30 MHz,
	-37dB @ 100 MHz
Switching speed.....	200 ns (max.)

VIDEO INPUT

Number/signal type.....	3 RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, and composite video
Connectors	(3) 15-pin HD female
Nominal I level	1V p-p for Y of component video and S-video, and for composite video; 0.7V p-p for RGB, and R-Y and B-Y of component video; 0.3V p-p for C of S-video
Min./max. levels	-0.5V to 2.0V p-p no offset at unity gain
Impedance.....	75 ohms
Horizontal frequency.....	15 kHz to 145 kHz
Vertical frequency	30 Hz to 170 Hz
Return loss	<-42dB @ 5 MHz
Max. DC offset.....	4.0V

VIDEO OUTPUT

Number/signal type.....	2 analog RGBHV, RGBS, RGsB, component video, S-video, and composite video
Connectors	
MMX 32 VGA A.....	(1) 15-pin HD female, 5 BNC female
MMX 32 VGA MTP	(1) 15-pin HD female
	(1) RJ-45 female for proprietary analog signals compatible with MTP R 15HD A, MTP RL 15HD A, and MTP RL 15HD A SEQ receivers
Nominal I level	1V p-p for Y of component video and S-video, and for composite video; 0.7V p-p for RGB, and R-Y and B-Y of component video; 0.3V p-p for C of S-video
Min./max. levels	0.3V to 2.0V p-p
Impedance.....	75 ohms
Return loss	<-30 dB @ 5 MHz

SYNC

Input type.....	RGBHV, RGBS, RGsB, RsGsBs
Output type.....	RGBHV, RGBS, RGsB
Input level.....	TTL 2.5V to 5.0V p-p, 4.0V p-p normal
Output level.....	TTL: 4V to 5V p-p, unterminated
Input impedance.....	510 ohms
Output impedance.....	75 ohms
Max input voltage.....	5V p-p
Max. propagation delay.....	30 ns
Max. rise/fall time	4.2 ns
Polarity	
MMX 32 VGA A.....	Positive or negative (follows input)
MMX 32 VGA MTP	Positive or negative (selectable at receiver)

AUDIO

Routing.....	3 x 2 stereo matrix
Gain	
Local output	Unbal. output: 0 dB
Program output.....	Unbal. output: 0 dB; bal. output: +6 dB
	Summed output (at MTP receiver)
	Unbal. output: 0 dB; bal. output: +6 dB
Frequency response	20 Hz to 20 kHz, ± 0.05 dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz nominal level
S/N	>90 dB, at max. output (unweighted)
Stereo channel separation	>76 dB @ 1 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type.....	3 stereo, PC level, unbal.
Connectors	(3) 3.5 mm mini stereo jacks
Impedance	
MMX 32 VGA A.....	25 kohms bal./unbal., DC coupled
MMX 32 VGA MTP	>3 kohms, bal/unbal, AC coupled
Nominal level.....	-10 dBV (316mV)
Max. level	+8.5 dBu, (unbal.) at 1%THD+N
NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV \approx 2 dBu	

AUDIO OUTPUT

Number/signal type	
MMX 32 VGA A.....	2 stereo, bal./unbal.
MMX 32 VGA MTP	2 stereo, bal./unbal.
	1 summed mono (L+R)
Connectors	
MMX 32 VGA A	(1) 3.5 mm mini stereo audio jack (unbal.)
	(1) 3.5 mm captive screw connector, 5 pole
MMX 32 VGA MTP	(1) 3.5 mm mini stereo audio jack (unbal.)
	(1) 3.5 mm captive screw connector, 5 pole
	(1) RJ-45
Impedance	50 ohms unbal., 100 ohms bal.
Max. level (Hi-Z)	>+17 dBu, bal. or unbal. at 1%THD+N
Max. level (600 ohm).....	>+14 dBm, bal. or unbal. at 1%THD+N
NOTE: 0 dBu = 0.775 volts (RMS).	

CONTROL/REMOTE — SWITCHER

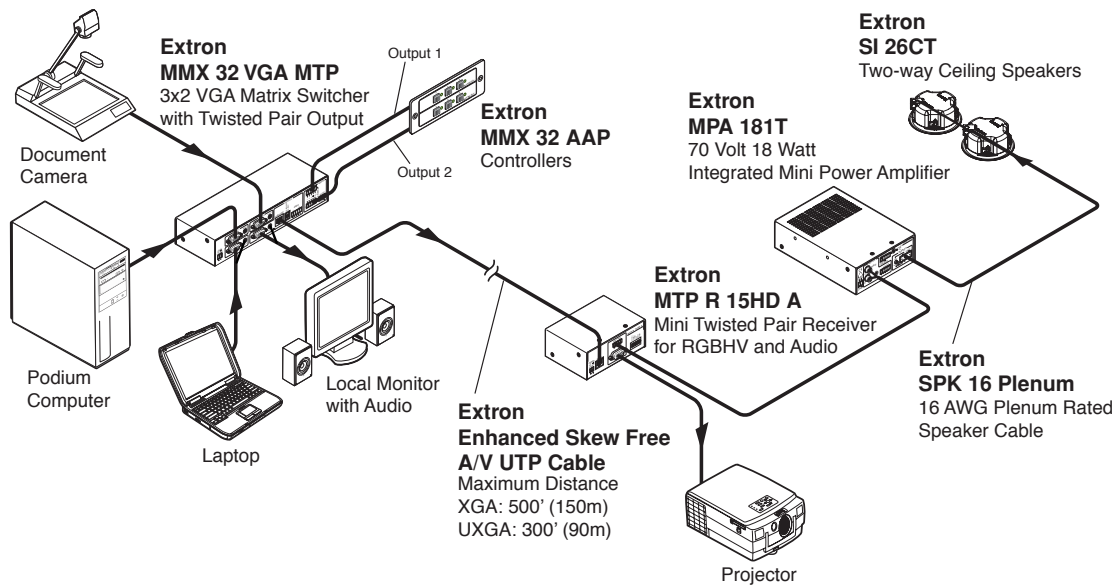
Serial Control Port	
MMX 32 VGA A	RS-232, 9-pin female D connector
MMX 32 VGA MTP	RS-232, female 3.5 mm captive screw, 3-pole
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	
MMX 32 VGA A	2 = TX, 3 = RX, 5 = GND
MMX 32 VGA MTP	1 = TX, 2 = RX, 3 = GND
Contact closure	
MMX 32 VGA A	9-pin female D connector
Output 1: 1 = input 1, 4 = input 2, 6 = input 3, 5 = GND	
Output 2: 7 = input 1, 8 = input 2, 9 = input 3, 5 = GND	
MMX 32 VGA MTP.....	(2) female 3.5 mm captive screw, 5-pole
Output 1: 1 = input 1, 2 = input 2, 3 = input 3, 4 = GND, 5 = 5 VDC	
Output 2: 1 = input 1, 2 = input 2, 3 = input 3, 4 = GND, 5 = 5 VDC	
Program control.....	Extron's control program for Windows®
	Extron's Simple Instruction Set (SIS™)

GENERAL

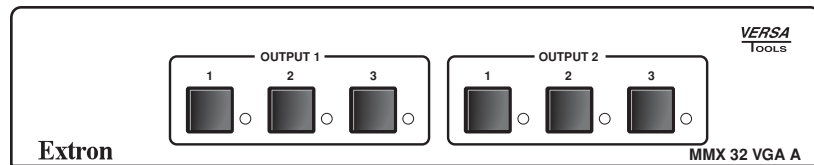
Power	100VAC to 240VAC, 50/60 Hz, external, autoswitchable; to 12VDC, 1 A power supply.
Power requirement	15 watts, product requires 0.7 A.
Rack mount.....	Yes, with optional rack shelf, part #60-190-01 or #60-190-20
Enclosure type.....	Metal
Enclosure dimensions	
MMX 32 VGA A	1.75" H x 8.75" W x 3.0" D
	(1U high, half rack width) 4.4 cm H x 22.2 cm W x 7.6 cm D (Depth excludes connectors.)
MMX 32 VGA MTP	1.75" H x 8.75" W x 6.0" D (1U high, half rack width) 4.4 cm H x 22.2 cm W x 15.2 cm D (Depth excludes connectors.)
Product weight	4.0 lbs (1.8 kg)
Shipping weight.....	5 lbs (2.3 kg)
Listings.....	UL, CUL
Compliances	CE, FCC Class A, VCCI, AS/NZS, ICES

Model	Version	Part Number
MMX 32 VGA A	3x2 VGA & Stereo Audio	60-565-01
MMX 32 VGA MTP	3x2 VGA & Stereo Audio with TP Output....	60-769-01

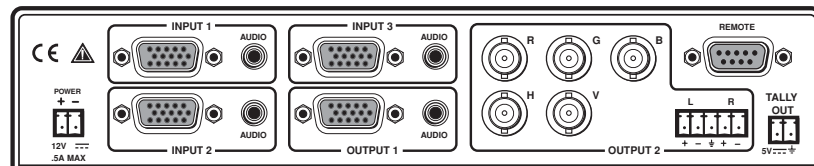
APPLICATION DIAGRAM



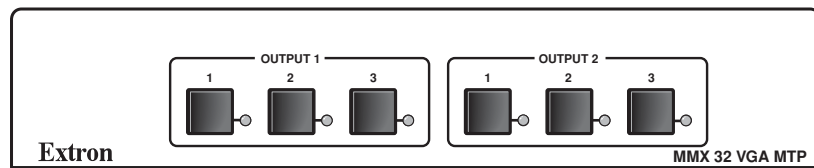
PANEL DRAWINGS



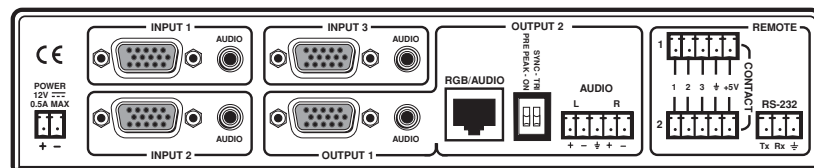
MMX 32 VGA A (Front)



MMX 32 VGA A (Back)



MMX 32 VGA MTP (Front)



MMX 32 VGA MTP (Back)



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