

Matrix 50 Series

VIDEO, S-VIDEO, HDTV/COMPONENT VIDEO,
AND/OR STEREO AUDIO MATRIX SWITCHERS

- Minimum 150 MHz (-3dB) video bandwidth, fully loaded
- Switches composite video, S-video, component video, and/or stereo audio
- Field-upgradable, modular design
- 8 x 4, 8 x 8, 12 x 4, and 12 x 8 I/O sizes
- Audio follow/audio breakaway
- Audio gain/attenuation
- QuickSwitch Front Panel Controller (QS-FPC™)
- Global memory presets
- Extron's Simple Instruction Set (SIS™)
- RS-232/422 and remote control options
- Front panel I/O label windows
- Vertical interval switching
- Video genlock
- Windows-based control program



Matrix 50 12 x 8 Composite Video & Audio

The Extron Matrix 50 Series switchers are broadcast quality matrix/routing switchers capable of switching multiple inputs and outputs of composite video, S-video, component video, HDTV, and stereo audio (balanced/unbalanced) signals. Matrix switchers are used in applications for which multiple sources (VCRs, cameras, etc.) must be switched to more than one output (monitors, projectors, etc.) either simultaneously or individually.



Extron® Electronics

www.extron.com

MATRIX 50 MODELS

PART NUMBERS



Matrix 50 12 x 8
Composite Video & Audio



Matrix 50 12 x 8
S-video & Audio



Matrix 50 12 x 8
Component Video & Audio



Matrix 50 12 x 8
Stereo Audio

Composite Video & Stereo Audio Matrix Switchers

Composite Video Matrix Switchers

	Part Number
Matrix 50 8x4 Composite Video	60-359BZ
Matrix 50 8x8 Composite Video	60-359EZ
Matrix 50 12x4 Composite Video	60-359HZ
Matrix 50 12x8 Composite Video	60-359KZ

Composite Video & Stereo Audio Matrix Switchers

	Part Number
Matrix 50 8x4 Composite Video and Audio	60-359BY
Matrix 50 8x8 Composite Video and Audio	60-359EX
Matrix 50 12x4 Composite Video and Audio	60-359HW
Matrix 50 12x8 Composite Video and Audio	60-359KV

S-Video & Stereo Audio Matrix Switchers

S-Video Matrix Switchers

	Part Number
Matrix 50 8x4 S-Video	60-359CZ
Matrix 50 8x8 S-Video	60-359FZ
Matrix 50 12x4 S-Video	60-359IZ
Matrix 50 12x8 S-Video	60-359LZ

S-Video & Stereo Audio Matrix Switchers

	Part Number
Matrix 50 8x4 S-Video and Audio	60-359CY
Matrix 50 8x8 S-Video and Audio	60-359FX
Matrix 50 12x4 S-Video and Audio	60-359IW
Matrix 50 12x8 S-Video and Audio	60-359LV

HDTV/Component Stereo Audio & Video Matrix Switchers

HDTV/Component Video Matrix Switchers

	Part Number
Matrix 50 8x4 HDTV/Component Video	60-359DZ*
Matrix 50 8x8 HDTV/Component Video	60-359GZ*
Matrix 50 12x4 HDTV/Component Video	60-359JZ*
Matrix 50 12x8 HDTV/Component Video	60-359MZ*

HDTV/Component Video & Stereo Audio Matrix Switchers

	Part Number
Matrix 50 8x4 HDTV/Component Video and Audio	60-359DY*
Matrix 50 8x8 HDTV/Component Video and Audio	60-359GX*
Matrix 50 12x4 HDTV/Component Video and Audio	60-359JW*
Matrix 50 12x8 HDTV/Component Video and Audio	60-359MV*

*Also switches RGB (red, green, blue with sync on green) signals up to 150 MHz bandwidth

Stereo Audio Matrix Switchers

Balanced or Unbalanced Stereo Audio Matrix Switchers

	Part Number
Matrix 50 8x4 Stereo Audio	60-359AY
Matrix 50 8x8 Stereo Audio	60-359AX
Matrix 50 12x4 Stereo Audio	60-359AW
Matrix 50 12x8 Stereo Audio	60-359AV

DESCRIPTION

- **Minimum 150 MHz (-3dB) video bandwidth** – Ensures switching and distribution of signals without degradation. The 150 MHz (-3dB) rating is a worst case specification; in other words, the Matrix 50 Series Switcher provides at least 150 MHz (-3dB) at full performance capacity—when one input signal drives all outputs.
- **Field upgradable and modular design** – The Matrix 50 Series Switchers provide the highest level of cost-effectiveness, flexibility, and expandability by allowing users to purchase only the modules required for their systems. Additional modules may be added at any time without having to send the unit back to the factory for expansion or application change.
- **QuickSwitch Front Panel Controller (QS-FPC™)** – The QuickSwitch FPC feature allows for touch-of-a-button input and output selection. Extron QuickSwitch technology eliminates the learning curve usually associated with switching the inputs and outputs of a matrix switcher by using a tactile front panel button for every input and output.
- **Front panel I/O label windows** – I/O buttons may easily be labeled by any Brother® P-Touch labeler or Extron label software, which ships with every Extron matrix switcher. Each input and output can be labeled with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection.
- **View I/O mode** – Allows users to easily see which individual inputs and outputs are actively connected. Available from the front panel or RS-232/422 control.
- **12 global presets** – The Matrix 50 Series Switchers can be configured for several different applications without the need to change the settings each time the application changes.
- **Video genlock** – Broadcast quality NTSC, PAL, or SECAM video genlock capabilities allow for vertical interval switching. This enables smooth, seamless transitions when switching between inputs.
- **RS-232/RS-422 control** – The Matrix 50 offers RS-232/422 control, which allows the switcher to be controlled via a third party control system.
- **Simple Instruction Set (SIS™)** – Extron's SIS is a set of basic ASCII code commands that provide simple control through a third party control system. Instead of programming in long, obscure strings of code, SIS makes it easy to operate an Extron product using RS-232/422 control.
- **Extron's control software** – For RS-232/422 remote control from a PC, Extron ships our Windows-based control software with every matrix switcher. This icon-driven software uses a graphical, drag-and-drop interface to make I/O configuration and other customization functions simple and convenient. This software also offers an emulation mode for configuration of an offsite matrix switcher; the I/O configuration may then be saved for future downloading to the matrix switcher.

FEATURES

- **MCP 1000 and MKP 1000 control** – Utilizing the MCP 1000 master control panel and any combination of MCP 1000 slave control panels or MKP 1000 control keypads offers the flexibility to control a Matrix 50 Matrix Switcher from a remote location or room. Both remote control options are easy to use and provide tactile buttons for quick selection. Each MCP 1000 panel may be used for one-button switching for a particular output and selecting global presets. Each MKP 1000 keypad may be used to select a different input or select a preset.
- **Balanced or unbalanced stereo audio** – The Matrix 50 Series offers the flexibility for handling both balanced or unbalanced audio signals. Depending on the application and cable distance requirements, some systems will require balanced audio.
- **Audio gain/attenuation (adjustable via RS-232/422 or front panel)** – The Extron Matrix 50 Series Switchers allow users to set the level of audio gain or attenuation (-15dB to +9dB). Individual input audio levels may be adjusted so there are no noticeable volume differences between sources.
- **Audio follow** – Extron Matrix 50 series switchers with audio feature the capability to switch an audio signal with its corresponding video signal. This feature also allows any audio signal to be sent with any video signal simultaneously to one or all outputs in any combination.
- **Complete audio breakaway** – With breakaway switching, the Matrix 50 Switchers can separate the audio signal from the video signal to switch either video only or audio only. The breakaway feature allows audio follow on any one or all channels. The audio channels can also be operated as a separate audio matrix.
- **Microprocessor controlled** – All features and functions of Extron's Matrix 50 Series Switchers are microprocessor controlled for maximum reliability and high performance.
- **Input and output connectors** – All connectors are clearly labeled as either inputs or outputs for easy installation. Each input, as well as each output, is individually buffered to provide maximum performance and virtually no crosstalk.
- **Rack-mountable** – With the use of the included hardware, any Matrix 50 Series Switcher is rack-mountable in any 2U high, 19" wide rack.
- **Internal international power supply** – The 100-240VAC, 50/60 Hz, auto switchable, internal power supply provides worldwide power compatibility.

VIDEO

Routing	8 x 4, 8 x 8, 12 x 4, or 12 x 8 matrix
Gain.....	Unity
Bandwidth	150 MHz (-3dB), fully loaded
0 - 10 MHz	no more than 0.1dB to -0.1dB
0 - 130 MHz	no more than 0.5dB to -0.5dB
Phase between I/Os	<1.28° at 3.58 MHz
Differential phase error	0.1%, 3.58 to 4.43 MHz
Differential gain error.....	0.1°, 3.58 to 4.43 MHz
Max. propagation of delay.....	5 nS typical (±1 nS)
Crosstalk	-50dB @ 5 MHz
Switching speed	200 nS (max.)

VIDEO INPUT

Number/signal type.....	8 or 12 RGB, RsGsBs, component video (Y, R-Y, B-Y), HDTV, S-video, composite video
Connectors	8 or 12 x 1, 2, or 3 BNC female
Minimum/maximum levels	Analog -0.5V to 2V p-p with no offset
Impedance.....	75 ohms
Return loss	-30dB @ 5 MHz
Maximum DC offset	1.5V
External sync (genlock)	0.3V to 0.4V p-p

VIDEO OUTPUT

Number/signal type.....	4 or 8 RGB, RsGsBs, component video (Y, R-Y, B-Y), HDTV, S-video, composite video
Connectors	4 or 8 x 1, 2, or 3 BNC female
Minimum/maximum levels	0.5V to 2.0V p-p
Impedance.....	75 ohms
Return loss	-30dB @ 5 MHz
DC offset	±5mV maximum with input at 0 offset
Switching type.....	Vertical interval

AUDIO

Routing	8 x 4, 8 x 8, 12 x 4, or 12 x 8 matrix
Gain.....	Unbalanced 0dB, balanced +6dB
Frequency response	20 Hz to 20 kHz, ±0.05dB
THD + Noise	0.03% @ 1 kHz at rated maximum output drive
S/N	>90dB, balanced, at rated maximum output drive (21dBu)
Crosstalk	<-80dB @ 1 kHz, fully loaded
Stereo channel separation	>80dB @ 1 kHz
THD.....	0.015%, worst case, @ 20 Hz to 20 kHz
CMRR	>75dB @ 20 Hz to 20 kHz

AUDIO INPUT

Number/signal type.....	8 or 12 balanced/unbalanced
Connectors	8 or 12 3.5 mm captive screw connectors, 5 pole
Impedance.....	>10 kohm, unbalanced/balanced, DC coupled

Maximum level	+19.5dBu, (balanced or unbalanced) at stated %THD+N
Input gain adjustment	-15dB to +9dB, adjustable per input via RS-232 or front panel

AUDIO OUTPUT

Number/signal type.....	4 or 8 stereo, balanced/unbalanced
Connectors	4 or 8 3.5 mm captive screw connectors, 5 pole
Impedance.....	Unbalanced 50 ohms, balanced 100 ohms
Gain.....	Unbalanced 0dBu, balanced +6dBu
Gain error	±0.1dB channel to channel
Maximum output (Hi-Z)	>+21dBu, balanced at stated %THD+N
Maximum output (600 ohm).....	>+15dBm, balanced at stated %THD+N

NOTE: 0dBu = 0.775 volts (RMS).

CONTROL/REMOTE

Serial control port	RS-232 or RS-422, 9-pin female D connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Program control.....	Extron's control program for Windows Extron's Simple Instruction Set™ - SIS™

GENERAL

Power	100VAC to 240VAC, 50/60 Hz, 30 watts, internal, auto-switchable
Rack mount	Yes
Enclosure type	Metal
Enclosure dimensions.....	3.5" H x 17.0" W x 9.5" D (2U high, full rack width) 8.9 cm H x 43.2 cm W x 24.1 cm D (Depth excludes connectors. Width excludes rack ears.)
Product weight	8.6 lbs (3.9 kg)
Shipping weight	15 lbs (6.8 kg)
DIM weight	25
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

DESCRIPTION

The Extron Matrix 50 Series is available in four different input/output (I/O) sizes: 8 x 4, 8 x 8, 12 x 4, and 12 x 8. Each module has one audio channel (mono or stereo) and three video channels that are capable of being populated customized to suit the requirements of any system. For example, if a system requires I/O switching of composite video with stereo audio follow, then only one video module and one audio module would be needed. But, if the system requires switching of S-video (S-VHS) and stereo audio, then two video modules and one audio module would be required. Thus, for component video, three video modules would be needed. Each Matrix 50 is designed with only the video and audio modules required for the application at hand.

DESCRIPTION

Matrix 50 Option Kits

The Matrix 50's field-upgradable, modular design allows for expansion and flexible configurations. Extron offers kits for adding modules to an existing Matrix 50. These kits include all the necessary parts and instructions for a qualified person to add capabilities to a Matrix 50.

8 x 4 Video Kit	70-045-01
8 x 8 Video Kit	70-045-02
12 x 4 Video Kit	70-045-03
12 x 8 Video Kit	70-045-04
8 x 4 Audio Kit	70-046-01
8 x 8 Audio Kit	70-046-02
12 x 4 Audio Kit	70-046-03
12 x 8 Audio Kit	70-046-04

Optional Accessories

SVHS-BNC adapter (male S-video to female BNCs)	26-353-01
BNCM-RCAF adapter (male BNCs to female RCA)	10-264-01

APPLICATION DIAGRAM



