

Extron Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

4 x 4, 8 x 4 and 8 x 8 configurations

Switches RGBS, audio and video

410/175 MHz bandwidth

Balanced or unbalanced audio

Audio breakaway

Free control software

Modular designs

Rack mountable

RGB to sync delay switching

RS-232/422 control

Video genlock

Video, RGB and audio mute



MATRIX 100 & 200 SERIES SWITCHERS



APPLICATION

Solutions in Switching

Extron provides the most innovative solutions to your matrix/routing needs. Extron's Matrix 100 & 200 Series Switchers exceed the level of function and flexibility that your system requires and customers demand. The sizes of the input/output (I/O) modules can be ordered as needed or changed in the field as the system grows or expands. Available input sizes are 4 x 4 (inputs by outputs) 8 x 4, 8 x 8 and, if necessary, can be designed for sizes up to 48 x 48. Because each switching application is unique the Matrix 100 & 200 include the ability to "customize" your switcher for optimum performance. Extron's Matrix 100 & 200 Series offer five video slots which allows you the ability to run maximum video configurations of RGBHV, RGBS&Cv as well as RGSB&YC.

What Are Matrix Switchers?

Matrix switchers are commonly used in applications where multiple inputs need to be routed to several output devices such as data or video projectors and monitors. They provide the ability to route any input to any output at any time in any combination. The main feature of a true matrix switcher is that an input can be routed to any one or all outputs.

Essentially, a matrix switcher consists of a series of distribution amplifiers and switchers which are housed in a single enclosure and is controllable either remotely or via a front panel controller (FPC). Extron's matrix switchers have been designed for maximum performance and flexibility. They are used primarily for routing high resolution computer signals, and will also handle NTSC, PAL or SECAM video, S-Video (S-VHS), and virtually any type of mono or stereo audio.

Extron's Matrix 100 Series and Matrix 200 Series Switchers share a number of basic features, but each has its own unique purpose of meeting your specific application and system requirements. Understanding how to build a matrix switcher is pertinent to meeting system requirements and designs. The matrix switcher includes a Basic Modular Enclosure (BME) which houses all of the modules and components including input and output (I/O) modules. Each of the series also provides their own flexibility and high performance standards, such as the difference in RGB video bandwidth between the Matrix 100 & 200.

The Matrix 100 Series Switchers

Video, RGB and Audio Routing



MATRIX 100 SWITCHER SERIES

Years of R&D history working with the ever popular Matrix 200 has enabled Extron to offer a 175 MHz RGB video bandwidth version of this popular RGB, video and audio routing system: The Matrix 100 Series Switcher.

The Matrix 100 Series Switcher offers an industry-wide, competitive alternative to every matrix switcher available on the market today. Extron's Matrix 100 Series Switcher offers three different I/O module sizes: a 4 x 4- four in, four out module for RGB, sync & composite video; an 8 x 4- eight in, four out for RGB, sync & composite video; and an 8 x 8- eight in, eight out for RGB, composite video, sync and audio. However, these configurations provide flexibility beyond the three fixed input sizes. For example: A Matrix 100 may have 4 x 4 RGBS modules, 8 x 4 composite video module and an 8 x 8 audio module in one unit. The modules are fixed, but the configuration is flexible! Configuration of the Matrix 100 Series Switcher allows multiple RGB video and audio sources (PCs, MACs, PowerPCs and workstations), video sources (composite and S-Video) and stereo audio (balanced or unbalanced) sources to be switched to a variety of presentation displays. The Matrix 100 Switcher's audio module provides unity gain and is available in an 8 x 8 configuration.

Like the Matrix 200, the Matrix 100 is a series of distribution amplifiers and switchers in a single enclosure, capable of being controlled by RS-232/RS-422 remote control. The Matrix 100 is housed in one, 4U high, 19" rack-mountable metal enclosure with an internal auto-switchable 100-240 volt power supply.

The Matrix 200 Series Switchers

High Resolution RGB & Video Routing



MATRIX 200 SWITCHER SERIES

Extron's 410 MHz

Matrix 200 Series Switchers are innovative, performance-driven, superior solutions to high resolution RGB and video routing systems. Utilizing many technological breakthroughs, the Matrix 200 Series Switchers offer a true 410 MHz video bandwidth. The highest RGB video performance ever offered in a matrix switcher, which means that even as the size of the matrix increases, RGB video bandwidth performance is not compromised. Extron's Matrix 200 Switcher offers three different I/O module sizes: a 4 x 4- four in, four out module for RGB, sync & composite video; an 8 x 4- eight in, four out for RGB, sync & composite video; and an 8 x 8- eight in, eight out for RGB, composite video, sync and audio. However, these configurations provide flexibility beyond the three fixed input sizes. For example: A Matrix 200 may have 4 x 4 RGBS modules, 8 x 4 composite video module and an 8 x 8 audio module in one unit. The modules are fixed, but the configuration is flexible! These configurations allow multiple RGB sources (computers, workstations, etc.), video NTSC/PAL/SECAM or S-VHS and stereo audio to be switched to a variety of presentation displays.

Essentially, the Matrix 200 is a series of RGB distribution amplifiers and switchers in one easy-to-use product. Matrix systems may be expanded in size externally for sizes of up to 48 x 48. Any size switcher may be ordered as RGB with sync on green, RGBS, RGBHV, composite video, S-Video and stereo audio. All switcher sizes are contained in a 4U high, rack mountable metal enclosure which includes an internal auto-switchable power supply and digital microprocessor control as well as a serial port for RS-232/RS-422 control.

BUILDING A SWITCHER

How to Build a Matrix Switcher

When you are selecting a matrix switcher to fit your system requirements, the following elements are necessary to include in your order. After you review these basic elements, you will then be able to move onto your selection of inputs and output modules.

- **Basic module enclosure (BME)** – The BME houses the main components and modules of the Matrix 100 & 200 Series Switchers. Every switcher, regardless of configuration, requires the BME as it includes the RS-232 and RS-422 control, 100-240 volt power supply, video (NTSC/PAL/SECAM) genlock capability, RGB delay [Matrix 200 only], complete breakaway, SmartControl™, remote front panel input connector and a rack mountable 4U High, 19" wide metal enclosure.

- **Front panel controller (LCD-FPC) [Matrix 200 Only]** – The LCD-FPC is optional with each Matrix 200 switcher as it is not required for switcher control or operation. The Matrix 200 Series Switchers have built-in microprocessor control and memory, called SmartControl®, and may be controlled externally through the rear panel RS-232/RS-422 control port via a third party control system or a remote PC/terminal. If local control is desired, the FPC must be specified with each Matrix 200 Switcher.

- **QuickSwitch™ front panel controller (QS-FPC)** – The QuickSwitch-FPC has been developed so that every function is defined by a front panel button. This has been designed to make switching input to outputs as easy as pressing a button. The QS-FPC utilizes the built-in SmartControl microprocessor of the Matrix 100 & 200. An additional QS-FPC may be remotely located, for example on a wall or at a podium, allowing remote control.

- **Blank front panel** – If you choose to remote an FPC or forego using an LCD-FPC or QS-FPC, a blank front panel is required to allow for a rack mountable front panel with a power LED.

- **I/O modules** – Depending on your application you will need to choose which modules are necessary for your particular application. Listed are the standard configurations listed for both the Matrix 100 & 200.

CONFIGURATIONS

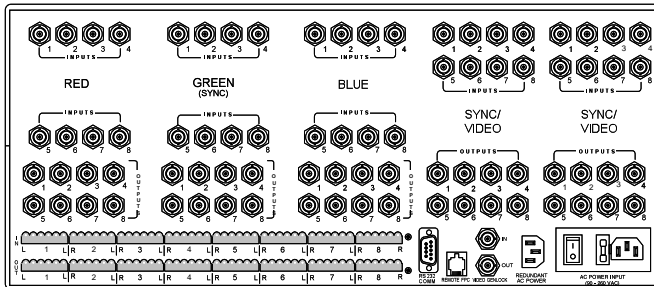
The Matrix 100 & 200 Series Switcher modules are available in three standard I/O (input/output) configurations:

- 4 inputs by 4 outputs (4 x 4)
- 8 inputs v by 4 outputs (8 x 4)
- 8 inputs by 8 outputs (8 x 8)
- 8 inputs by 8 outputs (8 x 8)– Audio

Each switcher may be populated with individual high resolution analog (RGB), video, S-Video, sync (H&V) and/or audio modules giving the Matrix 100 & 200 Series Switchers 16 possible video configurations with various I/O sizes available:

- RGB – Red, green, (sync on green), blue
- RGBS – Red, green, blue and separate composite sync
- RGBHV – Red, green, blue and separate H&V sync
- RGsBCv – Red, green (sync on green), blue and composite video
- RGsBYC – Red, green (sync on green), blue and S-Video
- RGBSCv – Red, green, blue, composite sync and video
- RGsBA – Red, green (sync on green), blue and stereo audio
- RGBSA – Red, Green, Blue, Composite Sync and Stereo Audio
- RGBHVA – Red, Green, Blue, separate H&V Sync and Stereo Audio

RGBHVA REAR PANEL DIAGRAM



- RGsBCvA – Red, green (sync on green), blue, composite video and stereo audio
- RGsBYCA – Red, Green (Sync on Green), Blue, S-Video and Stereo Audio
- RGBSCvA – Red, green, blue, composite sync, video and stereo audio
- CvA – Composite video with stereo audio
- YCA – S-Video with stereo audio
- Cv – Composite video only
- YC – S-Video only

I/O MODULES & OPTIONS

When ordering a Matrix 100 or 200 Series Switcher, the following I/O modules and options are available. Because every switcher is different, we will develop a “custom” part number to specify only

the options that you select. For example, a Matrix 200: 8 x 8 (RGBS) would include a BME, three 8 x 8 HRAM modules and one 8 x 8 sync module, with a FPC or blank front panel.

- Basic Module Enclosure (BME)
- HRAM Modules (for R, G and B -- one for each color) 8 x 8; 8 x 4; 4 x 4
- Video Modules (for video and S-Video) 8 x 8; 8 x 4; 4 x 4
- Sync Modules (for composite or H&V sync) 8 x 8; 8 x 4; 4 x 4
- Audio Module (8 x 8 only)
- QS-FPC– QuickSwitch front panel controller
- LCD-FPC– LCD Driven front panel controller (Matrix 200 only)
- Blank front rack panel– If the switcher does not require a QS-FPC or LCD-FPC then a Blank front panel must be ordered and the switcher must be remotely controlled.
- Redundant power supply

NOTE: The audio module option is shipped with captive screw terminal connectors for each input and output.

RETRO-FIT OPTIONS

The following part numbers are supplied as options to retro-fit the Matrix 100 & 200 Series switchers. All options are supplied with instructions, cable assemblies and all hardware necessary for field installation.

| | |
|--|-----------|
| Blank front panel | 60-147-01 |
| Front panel controller (LCD-FPC)..... | 60-146-01 |
| Audio module (8 x 8) Matrix 200 | 70-022-01 |
| Audio module (8 x 8) Matrix 100 | 70-039-01 |
| Redundant power supply | 70-020-01 |
| Captive screw connectors | 10-163-01 |
| S-VHS-BNC adapter (male to male) | 26-353-01 |
| Front panel controller (QS-FPC) | 60-188-01 |

MATRIX 100 Additional Modules

| | |
|-----------------------------|-----------|
| 4 x 4 MRAM module..... | 70-041-01 |
| 8 x 4 MRAM module..... | 70-041-02 |
| 8 x 8 MRAM module..... | 70-041-03 |
| 4 x 4 composite video | 70-042-01 |
| 8 x 4 composite video | 70-042-02 |
| 8 x 8 composite video | 70-042-03 |
| 4 x 4 sync | 70-059-01 |
| 8 x 4 sync | 70-059-02 |
| 8 x 8 sync | 70-059-03 |
| 8 x 8 audio | 70-039-01 |

MATRIX 200 Additional Modules

| | |
|-------------------------|-----------|
| 4 x 4 HRAM module | 70-023-01 |
| 8 x 4 HRAM module | 70-023-02 |

| | |
|------------------------------------|-----------|
| 8 x 8 HRAM module | 70-023-03 |
| 4 x 4 composite video | 70-025-01 |
| 8 x 4 composite video | 70-025-02 |
| 8 x 8 composite video | 70-025-03 |
| 4 x 4 sync module 510/75 ohm | 70-058-01 |
| 8 x 4 sync module 510/75 ohm | 70-058-02 |
| 8 x 8 sync module 510/75 ohm | 70-058-03 |
| 8 x 8 audio module..... | 70-022-01 |

FEATURES

Features of the Matrix 100 & 200 Series Switchers

■ **Balanced or unbalanced audio** – The Matrix 100 & 200 offer the flexibility for both balanced or unbalanced audio signals depending on your application and distance needs.

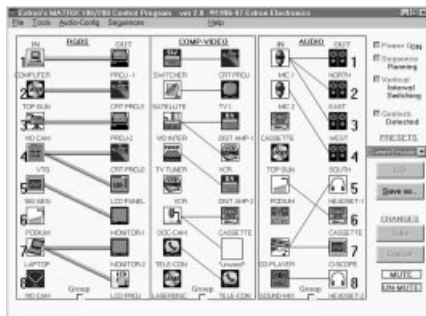
■ **Bandwidth** – The Matrix 200 offers a true 410 MHz bandwidth and the Matrix 100 offers a 175 MHz bandwidth. Depending on the application, you have the option to choose the best product for your particular requirements. The Matrix 100 & 200 were designed so that the original signal integrity is fully maintained due to the high bandwidths that each switcher offers.

■ **Complete breakaway** – This feature allows the user to program any video, S-Video or audio channel to be “broken-away” or to “follow” any one, group or all RGB selected source(s). This is a significant feature for staging applications.

■ **Audio breakaway** – An optional audio (8 x 8) module is available with the Matrix 100 & 200 Series Switchers using captive screw terminal connectors which populates the bottom 1U of the switcher. The breakaway feature allows audio-follow on any one or all channels, or can be operated as a separate audio matrix.

■ **Control Program software** – Extron has developed its own control software based on a Windows® program that allows you to mix and match input to output. This simple program, shipped with every Matrix 100 & 200 Matrix Switcher, makes I/O configuration simple because it uses graphic icons and icon labeling capabilities.

More importantly, the software also allows you to configure the switcher before using it via an emulation mode. Once you build your matrix with the software, you



can simply save the configuration, load it into the matrix, and you are ready to go!

■ **Modular design** – Both the Matrix 100 & 200 are comprised of a modular design. This flexibility allows you to purchase only the necessary modules for a particular application or system. For example, if sync is on green, then an additional composite sync module is not necessary. And, if only composite video is being used, RGB modules will not be necessary. Only the necessary I/O modules need to be purchased.

Additional modules may be added at any time without having to send the unit back to the factory in the case of expansion or application change. Available modules include high resolution analog, video/sync (NTSC/PAL/SECAM and S-VHS), and stereo audio.

■ **Presets** – Presets make life easier as the Matrix 100 & 200 can be configured for several different applications, therefore you do not have to change the settings each time you change the application. Simply pull the I/O configurations from the SmartControl memory. The Matrix 100 provides 8 presets and the Matrix 200 provides 20 presets.

■ **Rack mountable** – With the front panel of the Matrix 100 & 200, you will receive all the hardware necessary to mount the 19”, 4U high BME into a rack.

■ **Redundant power supply** – As an option, this additional power supply may be internally mounted to give the switcher a backup power supply, should the power generator supplying the first one become defective. This feature is necessary in critical applications where power reliability is a premium factor.

■ **RS-232/422 Control** – Both the Matrix 100 & 200 offer RS-232/422 control which allows the switcher to be controlled via a third party control system such as AMX, Crestron or Lexicon. You may also choose to use the RS-232/422 control port to integrate Extron’s own Windows® based control software that will run directly from your local PC.

■ **SmartControl™ microprocessor** – Known as SmartControl, the switcher has the ability to determine how many inputs and outputs are being utilized and practically configures itself for ease-of-use in such applications.

■ **Video genlock** – All Matrix 100 & 200 Series Switchers include broadcast quality NTSC/PAL/SECAM video genlock capabilities which allow for vertical interval switching, resulting in smooth, seamless transitions when switching between inputs.

■ **Video, RGB and audio mute** – Separate mute controls allow you to easily mute, or turn off the video or audio signals. These functions are front panel accessible or control system programmable.

FEATURES (Cont.)

Expanded Features of the Matrix 200 Series

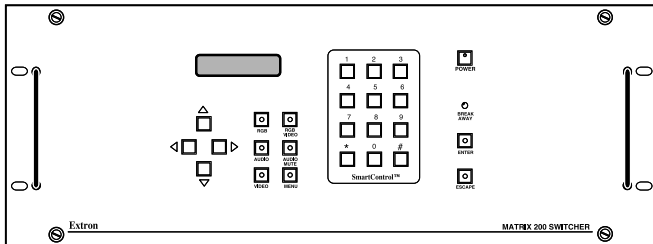
The Matrix 200 Series offers expanded features to further meet those system requirements you may have.

■ **Adjustable audio gain/attenuation** – Extron’s Matrix 200 allows you to set the level of audio from front panel controls whether for gain or attenuation.

■ **LCD Front Panel Controller** – The optional LCD Front Panel Controller (LCD-FPC) allows for easy configuration of inputs and outputs, as well as, the control of additional system features as required. But, when controlling the switcher via RS-232 or RS-422, an FPC is not necessary. In addition, two FPC’s can be used to control a single switcher (for redundant control) and where a second FPC is required to control the switcher from a remote location; such as a control room or wall panel.

■ **LCD menu driven SmartControl™** – The FPC includes a backlit LCD that simply "walks" the installer/user through all setup and program functions required to operate a Matrix 200 Switcher. A user friendly "quick-key macro" series of buttons cut installation and programming time of the Matrix 200, in half as compared to existing matrix switchers.

LCD FRONT PANEL CONTROLLER



■ **Programming** – This feature of the Matrix 200 allows the time and date to be set so that a sequence will run automatically.

■ **RGB to sync delay switching** – The Matrix 200 Series Switchers is capable of programmable RGB video delay on every output. This allows for "blanking" of the RGB video when switching multiple inputs/outputs. So, when switching, all projectors/monitors will "go black" instead of scramble with noise while they acquire the new signal rate.

■ **Security lockout** – If the switcher is installed in a secure environment, where easy access is not desirable, a password is required to operate the front panel controller.

■ **Sequencing** – The sequencing feature allows you to run through the selected presets switching from configuration to configuration continuously at predetermined time intervals. This is great for trade show displays or running demos.

■ **Trouble status indication (SmartControl)** – The SmartControl™ microprocessor within the CPU of the Matrix 200 Series Switcher acts as a status indicator at all times for any or all inputs/outputs, and it notifies the user of any problems that may have occurred such as a loss of power or front panel control. This saves valuable troubleshooting time and efforts.

SPECIFICATIONS

Matrix 100 Series

HRAM video (high resolution analog module)

| | |
|------------------------|---------------------------------------|
| Connectors | BNC |
| Bandwidth | 175 MHz (-3 dB) |
| Crosstalk | |
| at 10 MHz..... | -50 dB (typical) |
| at 100 MHz | -30 dB |
| Isolation: | |
| at 10 MHz..... | -60 dB (typical) |
| at 100 MHz | -55 dB |
| Return loss: | |
| at 10 MHz..... | -20 dB |
| Input impedance | 75 ohms |
| Output impedance | 75 ohms |
| Switching speed | 200 ns (nominal) |
| Input signal..... | .3 -1 V p-p (max dc offset ± .3 V) |
| Gain..... | Unity ± 1% |

Composite video module

| | |
|--------------------------------|---|
| Frequency response..... | .5 dB @ 5 MHz; -3 dB @ 15 MHz |
| Differential gain..... | .5% |
| Line and field tilt..... | Less than .1% |
| Isolation between outputs..... | > 40 dB @ 5 MHz |
| Crosstalk..... | > 40 dB @ 5 MHz |
| CMRR..... | -60 dB |
| Propagation delay | 10 ns |
| Input signal..... | 75 ohms, analog, 0-1 V p-p (max dc offset ± .3 V) |
| Gain..... | Unity |

Sync module

| | |
|-----------------------------|---|
| Input impedance | 510 ohms |
| Output impedance | 75 ohms |
| Max. input voltage..... | ±5 V |
| Input sensitivity..... | 500 mV p-p |
| Output level | 4.5 V p-p not terminated; 2.2 V p-p terminated at 75 ohms |
| Max propagation delay | 64 ns H to L (41ns L to H) |
| Max rise/fall time..... | 8 ns H to L (3.6 ns H to L) |
| Polarity | Follows input |

Audio module, general

| | |
|---------------------------|---|
| Input impedance | High Z (>10 k ohms, typical) |
| Input voltage level | To 6 V p-p into 600 ohms |
| Output impedance | Low, capable of driving 600 ohms, balanced |
| Output level | Unity gain |

SPECIFICATIONS (Cont.)

| | |
|--------------------------------------|---|
| Connectors | 6-conductor, captive screw audio terminal |
| Signal to noise | Better than 110 dB, 20 Hz-20 kHz |
| THD + noise | .03% @ 20 kHz worst case, +22 dBu input, + 22 dBu output |
| Differential input and output | |
| Adjacent channel crosstalk..... | >-85 dB @ 20 kHz |
| Common mode rejection ratio | -55 dB worst case @ 20 kHz (-65 dB typical) |
| Stereo channel separation | > 60 dB 20 Hz to 20 kHz |
| Bandwidth | 20 Hz - 20 kHz, flat \pm .1 dB |
| Audio input specifications | |
| Maximum input level | 45 V p-p differential 22 V p-p single-ended |
| Nominal input program level | -10 dBu (300 mV rms) |
| Input impedance | 20 k ohms, differential 10 k ohms, single-ended |
| Audio output specifications | |
| Maximum output level | 45 V p-p differential 22 V p-p single-ended |
| Nominal output program level | |
| Professional mode..... | -10 dBu (300 mV rms) |
| Professional mode..... | +4 dBu (1.2 V rms) |
| Consumer mode..... | -10 dBu (300 mV rms) |
| Output impedance | 50 ohms, differential to ground 22 V p-p Single-ended |
| Other specifications | |
| Power | 100-240 VAC, 50/60 Hz, 60 watts |
| Dimensions..... | 17" W x 15" D x 6.8" H 43 W x 38 D x 17 H cm |
| Rack mountable..... | Yes |
| Shipping weight..... | 22 lbs. (10 kg) |
| Operating temperature..... | 0°C - 50°C |
| Storage temperature | -20°C - 70°C |
| MTBF..... | 35,000 hours (demonstrated) |
| Approved | UL listed |
| Warranty | Two years, parts & labor |

Matrix 200 Series

HRAM video (high resolution analog module):

| | |
|------------------------|------------------|
| Connectors | BNC |
| Bandwidth | 410 MHz (-3 dB) |
| Crosstalk | |
| at 10 MHz | -50 dB (typical) |
| at 100 MHz | -30 dB |
| at 200 MHz | -30 dB |
| Isolation | |
| at 10 MHz | -60 dB (typical) |
| at 100 MHz..... | -55 dB |
| Return loss | |
| at 10 MHz | -20 dB |
| at 200 MHz | -50 dB |
| Input impedance | 75 ohms |
| Output impedance | 75 ohms |

| | |
|-----------------------|---|
| Switching speed | 200 ns (nominal) |
| Input signal..... | .3 -1. V p-p (max dc offset \pm .3 V) |
| Gain..... | Unity \pm 1% |

Composite video module

| | |
|--------------------------------|---|
| Frequency response..... | .5 dB @ 5 MHz; -3 dB @ 15 MHz |
| Differential gain..... | .5% |
| Differential phase..... | 1.3° |
| Line and field tilt..... | Less than .1% |
| Isolation between outputs..... | > 40 dB @ 5 MHz |
| Crosstalk..... | > 40 dB @ 5 MHz |
| CMRR..... | -60 dB |
| Propagation delay | 10 ns |
| Input signal..... | 75 ohms, Analog, 0-1. V p-p (max dc offset \pm .3 V) |
| Gain..... | Unity |

Sync module

| | |
|------------------------------|--|
| Input impedance | 510 ohms |
| Output impedance | 75 ohms |
| Max. input voltage..... | \pm 5 V |
| Input sensitivity..... | 500 mV p-p |
| Output level | 4.5 V p-p not terminated; 2.2 V p-p terminated at 75 ohms |
| Max. propagation delay | 64 ns H to L (41 ns L to H) |
| Max. rise/fall time..... | 8 ns H to L (3.6 ns H to L) |
| Polarity | Follows input |

Audio module input

| | |
|--------------------------------------|---|
| Type..... | 8 inputs, stereo, balanced with radio frequency suppression |
| Connectors | 6 conductor, captive screw audio Terminal |
| Impedance | >10 k ohm, AC coupled |
| Maximum level..... | (Balanced or single-ended) +28.7 dBu |
| CMRR..... | 65 dB typical 55 dB worst case @ 20 kHz |
| Input attenuation | 0 dB in consumer input mode 20 dB in professional input mode |
| Input ranges..... | Consumer input |
| Attenuation | -50 dBu to +8.7 dBu |
| Professional input attenuation | +9 dBu to +28.7 dBu |

Audio module throughput

| | |
|---------------------------------|--|
| Routing..... | 8 x 8 stereo matrix |
| Response..... | \pm .05 dB 20 Hz to 20 kHz |
| Gain adjustment..... | -95.5 dB To +31.5 dB Adjustable on individual left and right stereo channels per input |
| Maximum channel gain..... | 45.5 dB |
| THD + Noise..... | .03% @ 20 kHz worse case, +22 dBu input, + 22 dBu output, differential input and output |
| S/N..... | >110 dB, output 15 dBu, Normalized |
| Adjacent input crosstalk | Better than 85 dB, from 20 Hz to 20 kHz |
| Stereo channel separation | 60 dB from 20 Hz to 20 kHz |

Audio module output

| | |
|-----------|-----------------------------|
| Type..... | 8 outputs, stereo, balanced |
|-----------|-----------------------------|

SPECIFICATIONS (Cont.)

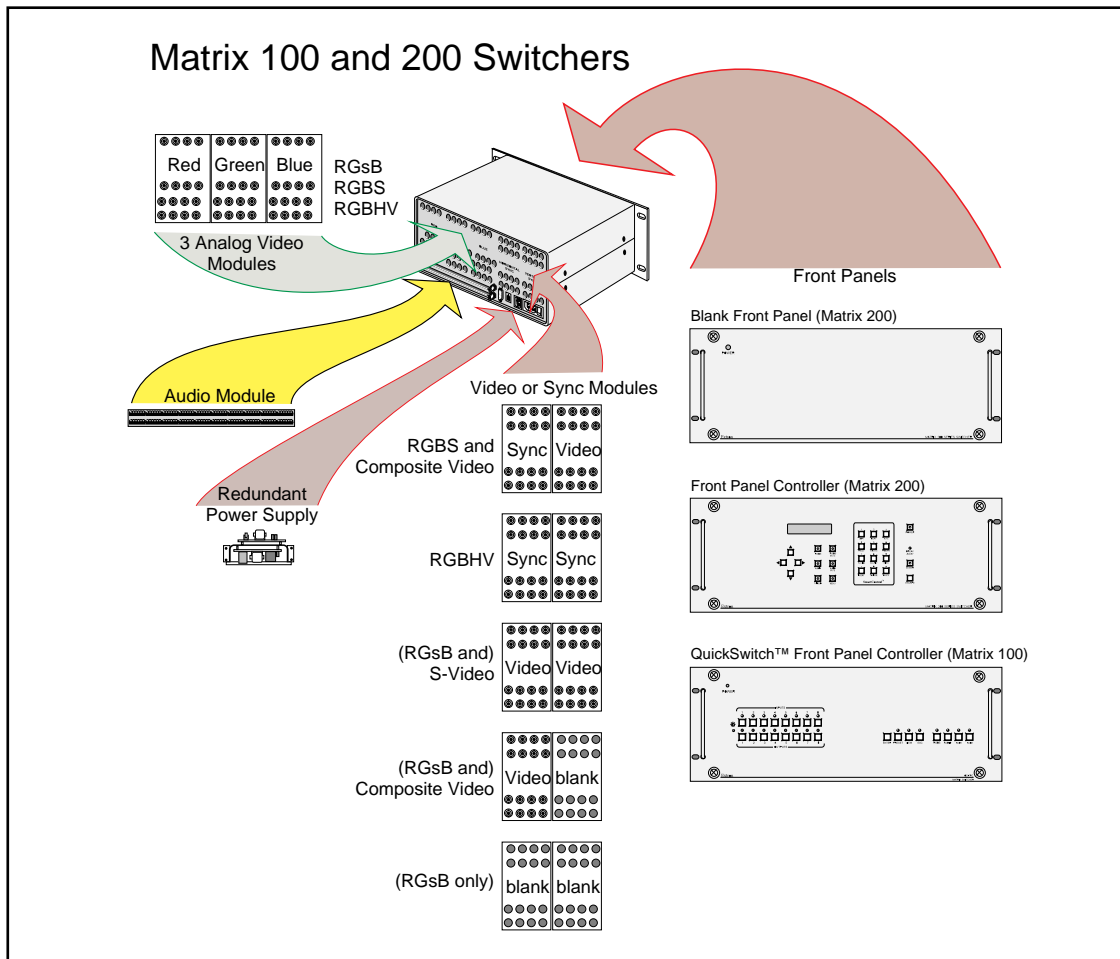
| | |
|--|---|
| Connectors | 6 conductor, captive screw |
| Impedance | 50 ohms |
| Gain | |
| Consumer output gain | Single-ended 0 dB, Differential +6 dB ±Throughput gain and input attenuation |
| Professional output gain | Single-ended +14 dB, Differential +20 dB, ±Throughput gain and input attenuation |
| Output gain ranges (from input to output) | |
| Consumer input attenuation | Consumer output gain -95.5 dB to +31.5 dB |
| Professional output gain | -84.5 dB to +45.5 dB |
| Professional input attenuation | |
| Consumer output gain | -11.5 dB to +11.5 dB |
| Professional output gain | -89.5 dB to +39.5 dB |
| Muting | >100 dB, each output Individually selectable |

| | |
|-------------------------------|--|
| Gain error | .1 dB channel to channel |
| Stereo output channel routing | |
| Mono source routing | L input to L and R output R input to L and R output |
| Stereo channel reversal | L input to R output, R input to L output |
| Drive | +28.7 dBu into 600 ohms, All outputs |

Other specifications

| | |
|-----------------------------|---|
| Power | 100-240 VAC, 50/60 Hz, 60 watts |
| Dimensions | 17" W x 15" D x 6.8" H 43 x W 38 D x 17 H cm |
| Rack mountable | Yes |
| Shipping weight | 22 lbs. (10 kg) |
| Operating temperature | 0° C - 50° C |
| Storage temperature | -20° C - 70° C |
| MTBF | 35,000 hours (demonstrated) |
| Approvals | CE Mark, UL & CUL listed |
| Warranty | Two years, parts & labor |

APPLICATION DIAGRAM



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