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AUDIO/VIDEO MATRIX SWITCH

Switch audio and video from many computers among multiple monitors and speakers



VEEMUX® SM-8X8-AV-LCD (Front and Back)

DIGITAL SIGNAGE

Features and Applications

The VEEMUX® Audio/Video Matrix Switch routes audio and video from many computers to multiple displays (projectors, monitors, etc.) and speakers. This switch can drive standard VGA cables, thus eliminating the need for external interfaces and coax cable connections via BNC connectors.

Signals from a range of input sources can be distributed to various output devices. A single computer video output can be routed to one or more monitors. Each video output is buffered from each input, ensuring signal integrity throughout the system. When switching ports, the audio automatically mutes until the video has been synchronized. The audio can be muted on command.

- Control and configure the switch through Ethernet, serial port or front panel buttons.
- Matrix Control Software with Graphical User Interface is included.
- Inputs and outputs can be named.
- Switch VGA video directly.
- Each output provides one video signal and one stereo signal.
- Video bandwidth is 200 MHz or greater, fully loaded.
- Each input can be independently connected to any or all outputs.
- Features break-away audio – audio can be switched independent of video.
- Supports 1920x1200 video resolution at a refresh rate of 85 Hz.
- Crestron® compatible.
  - Module controls routing, reset and status RS232 functions.

Specifications

Video Input

- Female 15-pin HD connectors.
- Impedance: 75 Ohms.

Video Output

- Female 15-pin HD connectors.
- 1920x1200 video resolution with no degradation.
- Impedance: 75 Ohms.
- Bandwidth: 200 Mhz, fully loaded.

Audio Input

- 3.5mm stereo audio jacks.
- Impedance: 10k Ohm.
- Maximum Input Level: 1 Vrms or 2.5Vp-p.

Audio Output

- 3.5mm stereo audio jacks.
- Drives 8-Ohm speakers.
- Unbalanced Gain: user defined.
- Frequency Response: 20 Hz to 20 kHz, ±0.5 dB.
- Total Harmonic Distortion + Noise: 0.01% at 1kHz.
- Gain Adjustment: -20 dB to +10 dB in 2 dB steps.
- 200 mW RMS of continuous power per output.
- When switching ports, audio mutes until video has been synchronized.

Regulatory Approvals

- CE, FCC, RoHS

Environmental

- Operating temperature: 32°F to 100°F (0°C to 38°C)
- Storage temperature: -20°F to 140°F (-30°C to 60°C)
- Operating and Storage Relative Humidity: 17 to 90% non-condensing RH.

Power

- 110 or 220 VAC at 50 or 60 Hz via IEC connector

Power Consumption

Model	Power (W)	Model	Power (W)	Model	Power (W)	Model	Power (W)
8x2	10	16x2	15	16x12	25	32x4	20
8x4	15	16x4	15	16x16	30	32x8	25
8x8	20	16x8	20	32x2	20	32x16	35

MTBF

Model	MTBF (hrs)	Model	MTBF (hrs)	Model	MTBF (hrs)	Model	MTBF (hrs)
8x2	62,260	16x2	62,080	16x12	51,360	32x4	47,820
8x4	59,510	16x4	59,180	16x16	49,150	32x8	46,740
8x8	54,350	16x8	54,700	32x2	51,530	32x16	42,230

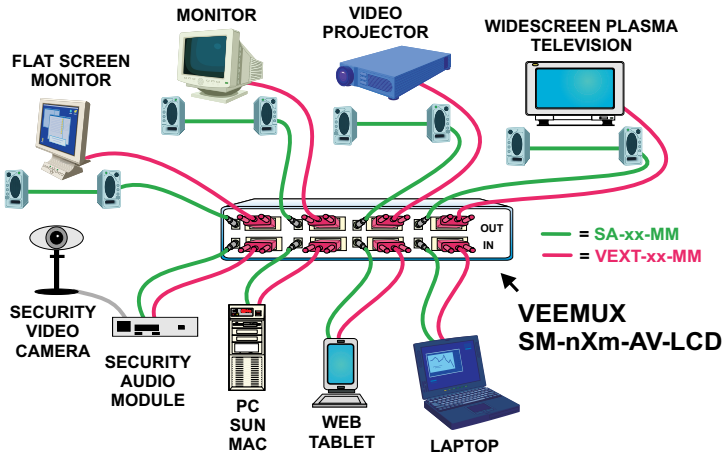
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Configuration and Cable Illustration of VEEMUX Audio/Video Matrix Switch



Built-In Control Methods

Front Panel Interface

- Configuration and control can be done using the front panel buttons.
- Keypad allows selection of the input source to be routed to the desired outputs.
- LED Matrix Display visually shows which inputs are connected to which outputs. (Available on the 16x8, 16x12, 16x16, 32x8 and 32x16 video matrix switches.)

RS232 Control

- Configuration and control can be done through the serial port.
- Baud rate: 1200 to 115200.
- Address up to 15 units with one serial port.
- Changes multiple input-to-output connections quickly and efficiently.

Commands

- CC - save connection configuration.
- RC - recall conncetion configuration.
- RV - read switch type and version.
- CS - causes one INx/OUTx connection to occur.
- CA - causes all inputs to connect to specified output.
- RO - reads what input is connected to specified output.
- RU - reads size of matrix, reports number of inputs and outputs.
- EA - set the IP address.
- EM - set the IP mask.
- EG - set the default gateway.
- ET - set the webserver timeout.
- GO* - read input connected to specified output.
- GM* - read input connected to all outputs.
- SS* - enables/disables port change auto status.

*Not GUI compatible.

Ethernet

- Female RJ45 connector.
- 10/100 BaseT Ethernet interface.
- Supported protocols: HTTP, HTTPS, Telnet.
- Configuration and control can be done over the Internet via Web Server or Telnet.

Web Server

- Password (optional SSL encryption) and Administrator configurable timeout to ensure security.
- Up to 25 users can be logged into the web page at one time.
- Users and administrators can access the following pages:
  - Switch page – connect any input to any output, save and recall up to 10 connection configurations, force compensation on all ports. Ports can be listed in order by port name or port number.
  - Change password page – administrator and users can change their password.
  - Help page – review documentation on the usage of the web interface.
  - Update Webserver page – restart the webserver to resynchronize all settings with the VEEMUX proper.
  - Logout page – view currently active users and logout of the web interface.
- The Administrator can access the following Administrative only pages:
  - Web setup page – configure IP address, subnet mask and timeout.
  - Serial setup page – configure serial speed and serial settings.
  - Ports settings page – assign names to inputs/outputs.
  - Update Firmware page – load firmware updates.

Telnet

- Security is ensured by the Administrative password.
- Commands are similar to RS232 commands.
- The telnet server listens on ports 2000 and 2005.
  - Port 2000 is for an operator telnet session.
  - Port 2005 is intended for a software control type session.

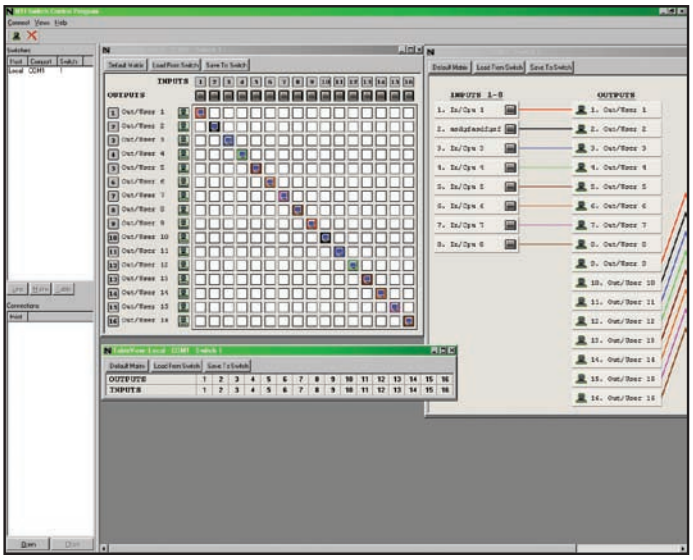
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AUDIO/VIDEO MATRIX SWITCH

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Matrix Control Software

- Supports Microsoft Windows® 95/98/NT/ME/2000/XP/Vista.
- Intuitive graphical software provides fast switch control of up to 15 switches using an RS232 connection.
- Control switches with simple drag-n-drop interfaces.
- Supports control over daisy-chained configurations.
- Save and load feature allows frequently used matrix switch configurations to be recalled with the click of a button.
  - Up to nine configurations can be saved/recalled from the switch's internal memory.
- Automatically displays status for all attached switches each time the program is started.
- Inputs and outputs can be named.
- Auto-Update: the view will automatically update when the switch changes configuration.
- Includes HTML help feature.
- View and control multiple switches simultaneously with three unique and powerful views:
  - Matrix View.
  - Table View.
  - Line View.



Screen shot of NTI's matrix control management software with a GUI interface.

Ordering Specifications

Audio/Video Matrix Switch

This example explains the VEEMUX switch part number by breaking it down into the available options. When ordering, choose the options that you require.

	Number of Inputs (Computers)		Number of Outputs (Monitors)		Audio/Video		Optional Control Method
SM -	*n*	X	*m*	- AV -	LCD	-	IR
	"n" = 8, 16, 32		"m" = 2, 4, 8, 12, 16		LCD = Liquid Crystal Display Standard		IR = Infrared

Audio/Video Matrix Switch Models

NTI Part #	# of Audio/ Video Inputs (n)	# of Audio/ Video Outputs (m)	Rack Units	Rack Size WxDxH (mm)
SM-8X2-AV-LCD	8	2	2RU	482x254x89
SM-8X4-AV-LCD	8	4	2RU	482x254x89
SM-8X8-AV-LCD	8	8	2RU	482x305x89
SM-16X2-AV-LCD	16	2	2RU	482x254x89
SM-16X4-AV-LCD	16	4	2RU	482x254x89
SM-16X8-AV-LCD	16	8	3RU	482x305x133
SM-16X12-AV-LCD	16	12	3RU	482x305x133
SM-16X16-AV-LCD	16	16	3RU	482x305x133
SM-32X2-AV-LCD	32	2	4RU	482x305x178
SM-32X4-AV-LCD	32	4	4RU	482x305x178
SM-32X8-AV-LCD	32	8	4RU	482x305x178
SM-32X16-AV-LCD	32	16	4RU	482x305x178

Cables

- Interface cables between the computers and the switch are required for proper operation.
- Recommended NTI video cables:
  - VGA interface cable (VEXT-xx-MM).
  - VGA to BNC cable (VINT-5B-6).
- Recommended NTI audio cables.
  - SA-xx-MM
- Cables not included.

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