VGA Video + Audio Matrix Switch via CAT5 to 600 Feet: 8x8 to 32x16

VEEMUX®

Route and distribute audio/video up to 600 feet using CAT5 cable instead of bulky coax cables

- Configure and control the switch through Ethernet, serial port or front panel buttons.
- Matrix Control Software with Graphical User Interface is included.
- Supports resolutions up to 1920x1440.
- Inputs and outputs can be named.
- Video quality adjustment is done automatically at every connection change, or can be forced via the front panel or web interface.
- Equipped with Liquid Crystal Display (LCD) for front panel operation.
- A digital VU-meter shows the audio levels of the selected output.
- Each output provides one video signal and one stereo audio signal.
- Each input can be independently connected to any or all outputs with no image degradation.
- No loss of audio or video quality between the local and remote units.
- 1RU or 2RU rackmount case is standard.

DIGITAL SIGNAGE

VEEMUX® SM-16X16-C5AV-LCD (Front and Back)

Designed and Manufactured in the USA

- **8x8, 16x16 & 32x16 available**
- **Supports resolutions to 1920x1440.**

The VEEMUX® Audio/Video Matrix Switch routes audio and video inputs from many video sources to multiple displays (projectors, monitors, etc.) and speakers via inexpensive Cat5/5e/6 UTP cable. It is capable of connecting to as many as 32 video sources via transmitters and 16 video displays via receivers with a maximum extension of 600 feet between the local and remote units.

A single audio/video output can be routed to one or more destinations. Each image will be as crisp and clear as if directly connected to the original source. Buffered video outputs and digital transmission of audio signals ensures integrity is maintained throughout the system.

ST-C5VA-600 – With Stereo Audio (Local and Remote Units)

Specifications

VEEMUX SM-nXm-C5AV-LCD

- Female RJ45 input/output connectors.
- Analog bandwidth is 175 MHz.
- 10/100BaseT ethernet interface.
- Supported protocols: HTTP, HTTPS,Telnet.
- RS232 interface.
- Signal to noise ratio (SNR):
  - Audio: >72dBA
  - Video: >65dB
- Audio harmonic distortion and noise: <0.06%
- Video distortion: 70dB @ 10 MHz

Environmental

- Operating temperature: 32°F to 100°F (0°C to 38°C).
- Storage temperature: -22°F to 140°F (-30°C to 60°C).
- Operating and storage relative humidity: 5 to 90%non-condensing RH.

Regulatory Approvals

- CE, RoHS
- TAA compliant

Power

- 100 to 240 VAC at 50 or 60 Hz via IEC connector.
- Add -48V5V10A2, optional internal DC-DC converter, to install the SM-nXm-C5AV-LCD in a Telecom environment.

Power Consumption

NTI Part #	Power (W)	NTI Part #	Power (W)
SM-8X8-C5AV-LCD	20	SM-32X16-C5AV-LCD	35
SM-16X16-C5AV-LCD	40		

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
SM-8X8-C5AV-LCD	58,607	SSM-32X16-C5AV-LCD	42,137
SM-16X16-C5AV-LCD	48,479		

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Specifications (Continued)

Local Unit (Transmitter)

Video

- VGA transmitter:
  - Male 15-pin HD connector for input connection.
  - Female 15-pin HD connector for local monitor.
  - Supports resolutions to 1920x1440.
- Input impedance: 75 Ohms.
- Maximum input levels: 1.45Vp-p.
- Supports Separate and Composite TTL level sync.
- Input Sync frequency ranges:
  - Horizontal: 15 kHz to 130 kHz.
  - Vertical: 30 Hz to 150 Hz.
- Video is DC coupled.

Audio

- VGA video + audio transmitter: 3.5mm stereo audio plugs for input connection and 3.5mm stereo audio jack for local speakers.
- Input impedance: 10k Ohms.
- Maximum input levels: 3.1Vp-p (line level).
- CD quality audio output.

Power

- 100 to 240 VAC at 50 or 60 Hz via AC adapter.
- Power consumption: 10W
- Use the PWR-48V-9V0,6A or PWR-12V-9V0,6A DC-DC power converter to install the local unit in a Telecom environment.

Environmental

- Operating temperature: 32°F to 100°F (0°C to 38°C).
- Storage temperature: -22°F to 140°F (-30°C to 60°C).
- Operating and atorage relative humidity: 5 to 90% non-condensing RH.

Regulatory Approvals

- CE, FCC, RoHS
- TAA compliant

Remote Unit (Receiver)

Video

- VGA receiver:
  - Female 15-pin HD connector.
  - Supports resolutions up to 1920x1440.
- Video quality adjustment for different lengths of CAT5/5e/6 cable is done automatically.
  - When using CAT6, some degradation may be experienced, depending on the length of the cable.
- Output impedance: 75 Ohms.
- Maximum output level: 1.45Vp-p.

Audio

- VGA video + audio receiver: 3.5mm stereo audio jack.
- Frequency response: 20 Hz to 20 kHz, ±1.5dB.
- Signal-to-Noise Ratio (SNR): 72 dBA.
- Total Harmonic Distortion and Noise (THD+N): 0.017%
- Stereo crosstalk: -70 dB.
- Maximum output levels: 3.1Vp-p (line level).
- Line level output; supports multimedia speakers.
  - CD quality audio output.
- Requires powered speakers.

Power

- 100 to 240 VAC at 50 or 60 Hz via AC adapter
- Power consumption: 10W
- Use the PWR-48V-9V0,6A or PWR-12V-9V0,6A DC-DC power converter to install the remote unit in a Telecom environment.

Environmental

- Operating temperature: 32°F to 100°F (0°C to 38°C).
- Storage temperature: -22°F to 140°F (-30°C to 60°C).
- Operating and atorage relative humidity: 5 to 90% non-condensing RH.

Regulatory Approvals

- CE, FCC, RoHS
- TAA compliant

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
ST-C5VA-L-600	84,189	ST-C5CMPSA-L-600	77,426

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
ST-C5VA-R-600	82,214	ST-C5SVA-R-600	86,077

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Specifications (Continued)

Compatible NTI Products

- Combine NTI's extenders, switches, and converters for complex applications.
  - VGA/Component Video to HDMI Converter (VGACMP-HD)
    - Use with VGA Receiver ST-C5VA-R-600 to convert the video and audio output into a single HDMI signal with embedded audio.
    - Requires SAM-2RCAM-xx audio cables (not included).
  - Ultra Low-Cost VGA + Audio to HDMI Converter Cable (VGAA-HD-ULC)
    - Requires USB power from a compatible display or PC

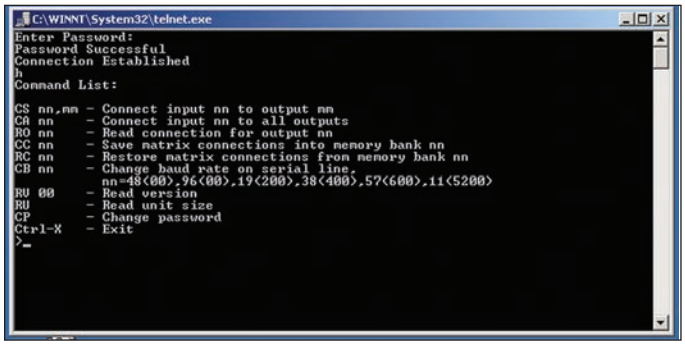
Built-In Control Methods

Web Server

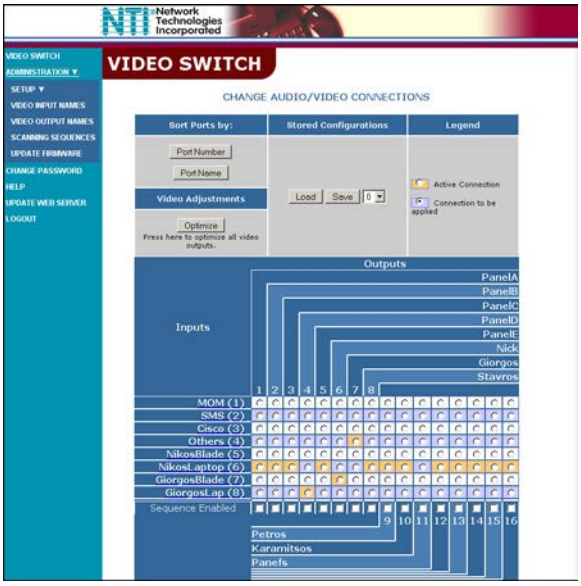
- Security is ensured by password and user configurable timeout.
- Up to 25 users can access the web page at one time.
- The user can access the following pages:
  - **Switch page**: allows the user to connect any input to any output, save and recall up to ten connections.
  - **Administration pages**: administrator can access setup pages, port setting page and update firmware page. Assign names to video and audio inputs and outputs.
  - **Password page**: allows the user to change the password for accessing the web interface.
  - **Help page**: documentation on the usage of the web interface.
  - **Update Web Server page**: globally update the web server to any settings that have been changed.
  - **Logout page**: view currently active connections and logout of the web interface.

Ethernet Control

- Configuration and control can be done over the Internet via web page or telnet.



Screenshot of the telnet interface



Screenshot of the web server interface

Telnet

- Security is ensured by 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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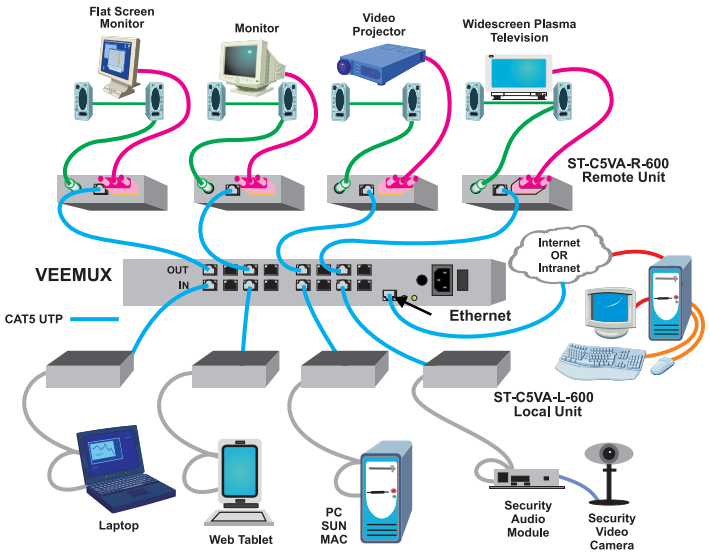
Built-In Control Methods (Continued)

RS232 Control

- Configuration and control can be done through the serial port.
- Control the switch using Matrix Control Software with Graphical User Interface (GUI control) via RS232.
- Selectable baud rate: 1200 through 9600.
  - Baud rate is set via the main menu, serial command, telnet or web page.

Configuration and Cable Illustration



Commands

- **CS**–causes INx/OUTx connection to occur.
- **CA**–causes all inputs to connect to specified output.
- **RO**–reads what input is connected to specified output.
- **CC**–save matrix.
- **RC**–recall matrix.
- **CB**–change baud rate.
- **RV**–version information.
- **RU**–reads size of matrix, reports number of inputs and number of outputs on specified switch.
- **EA**–set the IP address.
- **EM**–set the IP mask.
- **EG**–set the default gateway.
- **ET**–set the webserver timeout.

Front Panel Interface

- Liquid Crystal Display (LCD) can display all current connections.
- Locally change input and output selections with front panel buttons.
- Digital VU-Meter displays the audio levels for the currently selected port.
- Configuration and control can be done using the front panel buttons.
- Main menu allows the user to:
  - Set serial address.
  - Set serial speed.
  - Set IP address.
  - Set Subnet Mask.
  - Adjust contrast.
  - Force compensation.
  - Show size.

Resolutions Using VGA Transmitters and Receivers

Cable	Distance (feet)	Resolution
CAT5/CAT5e (UTP)	600	1024x768 at 60Hz
	400	1280x1024 at 60Hz
	300	1600x1200 at 60Hz
	100	1920x1440 at 60Hz
CAT5/CAT5e (STP), CAT6 (UTP)	300	1024X768 at 60Hz
	200	1280x1024 at 60Hz
	100	1920x1440 at 60Hz

CAT5 A/V Matrix Switch Models

NTI Part #	# of Inputs	# of Outputs	Rack Units	Size WxDxH (in)
SM-8X8-C5AV-LCD	8	8	1RU	19x12x1.75
SM-16X16-C5AV-LCD	16	16	1RU	19x12x1.75
SM-32X16-C5AV-LCD	32	16	2RU	19x12x3.5

Cables

- Use CAT5, CAT5e or CAT6 solid straight through cable for TIA/EIA-568B wiring terminated with standard RJ45 connectors. Cables not included.

Transmitter and Receiver Models

Supported Features	Transmitters NTI Part #	Receivers NTI Part #
VGA + audio	ST-C5VA-L-600	ST-C5VA-R-600