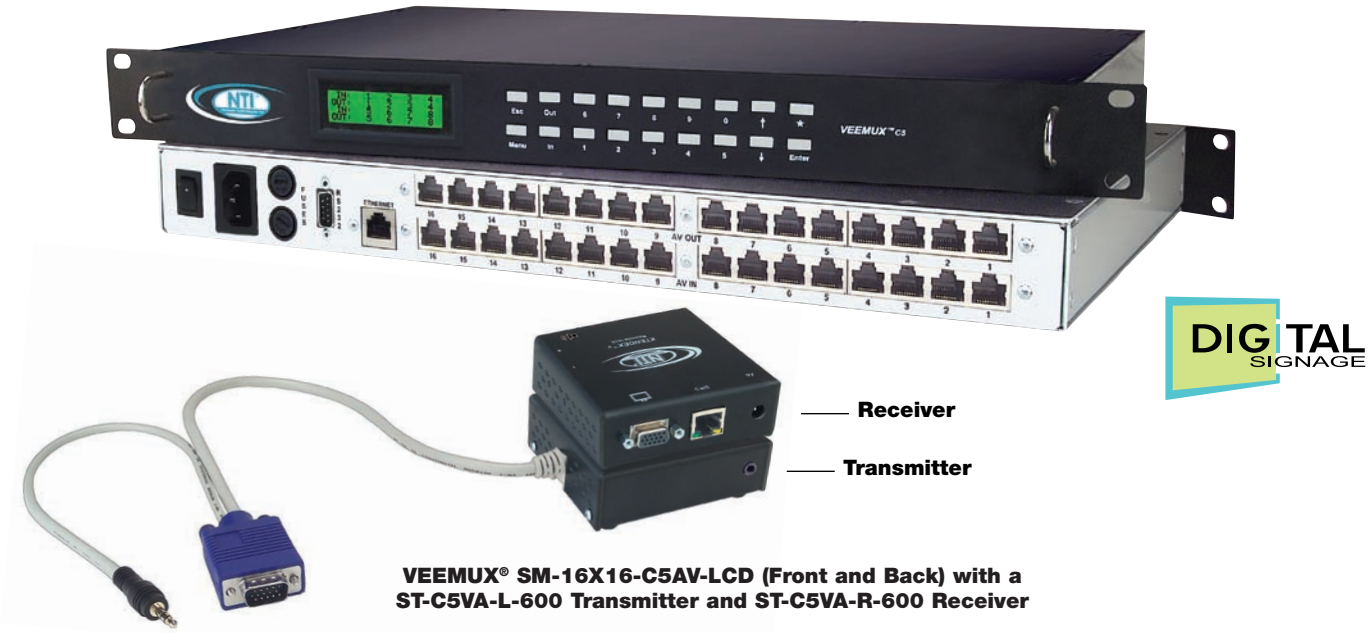
AUDIO/VIDEO MATRIX SWITCH VIA CAT5

Route and distribute audio/video up to 182 meters using CAT5 cable instead of bulky coax cables



VEEMUX® SM-16X16-C5AV-LCD (Front and Back) with a ST-C5VA-L-600 Transmitter and ST-C5VA-R-600 Receiver

DIGITAL SIGNAGE

Features and Applications

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 182 meters between the local and remote units.

- 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.
- VGA, S-Video and HDTV transmitters and receivers can be supported on the same VEEMUX unit.
  - VGA inputs only work with VGA outputs, S-Video inputs only work with S-Video outputs, and HDTV component video inputs only work with HDTV component video outputs.

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.

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.

Regulatory Approvals

- CE, RoHS

Power

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

Power Consumption

NTI Part #	Power (W)	NTI Part #	Power (W)
SM-8X8-C5AV-LCD	20	SM-16X16-C5AV-LCD	40
SM-8X16-C5AV-LCD	35	SM-32X8-C5AV-LCD	35
SM-16X8-C5AV-LCD	30	SM-32X16-C5AV-LCD	35

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
SM-8X8-C5AV-LCD	58,607	SM-16X16-C5AV-LCD	48,479
SM-8X16-C5AV-LCD	49,569	SM-32X8-C5AV-LCD	45,248
SM-16X8-C5AV-LCD	52,007	SM-32X16-C5AV-LCD	42,137

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330.562.7070
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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.
- S-Video transmitter:
  - Male 4-pin miniDIN connector for input connection.
  - Female 4-pin miniDIN connector for local monitor
  - Supports maximum 800x600 S-Video resolution.
- HDTV Component Video transmitter:
  - Three RCA plugs for input connection.
  - Three RCA jacks for local monitor.
  - Compatible with YPbPr component video.
- 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.
- S-Video + audio transmitter: two RCA plugs for input connection and 3.5mm stereo audio jack for local speakers.
- HDTV + stereo audio transmitter: two RCA plugs for input connection and two RCA jacks for local speakers.
- Input impedance: 10k Ohms.
- Maximum input levels: 3.1Vp-p (line level).
- CD quality audio output.

Power

- 110 or 220 VAC at 50 or 60 Hz via AC adapter.
- Power consumption: 10W

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.

Regulatory Approvals

- CE, FCC, RoHS

Remote Unit (Receiver)

Video

- VGA receiver:
  - Female 15-pin HD connector.
  - Supports resolutions up to 1920x1440
- S-Video receiver:
  - Female 4-pin miniDIN connector.
  - Supports maximum 800x600 S-Video resolution.
- HDTV Component Video receiver:
  - Three RCA jacks.
  - Resolutions: HDTV 480i, 480p, 720i, 720p, 1080i, 1080p.
- 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.
- S-Video + audio receiver: 3.5mm stereo audio jack.
- HDTV + stereo audio receiver: two RCA jacks.
- Frequency response: 20 Hz to 20 kHz, ±1.5dB.
- Signal-to-Noise Ratio (SNR): >72 dBA.
- Total Harmonic Distortion and Noise (THD+N): <0.06%.
- 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

- 110 or 220 VAC at 50 or 60 Hz via AC adapter
- Power consumption: 10W

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.

Regulatory Approvals

- CE, FCC, RoHS

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
ST-C5VA-L-600	84,189	ST-C5SVA-L-600	86,086
ST-C5HDTV-L-600	77,426		

MTBF

NTI Part #	MTBF (hrs)	NTI Part #	MTBF (hrs)
ST-C5VA-R-600	82,214	ST-C5HDTV-R-600	83,389
ST-C5SVA-R-600	86,077		

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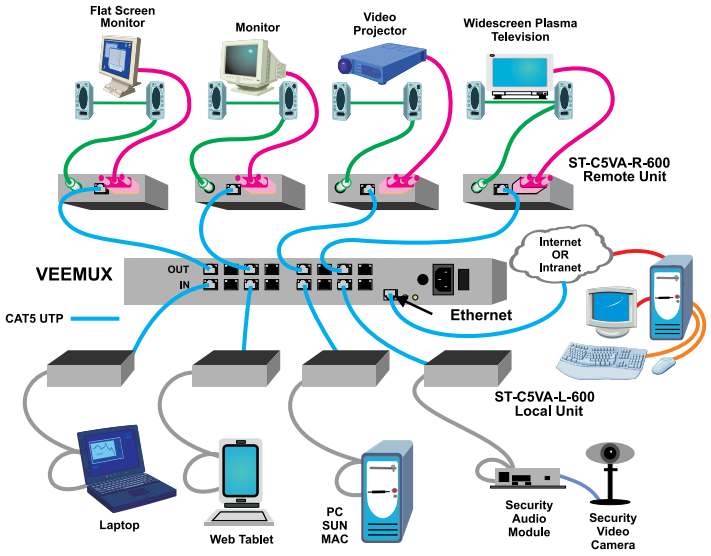
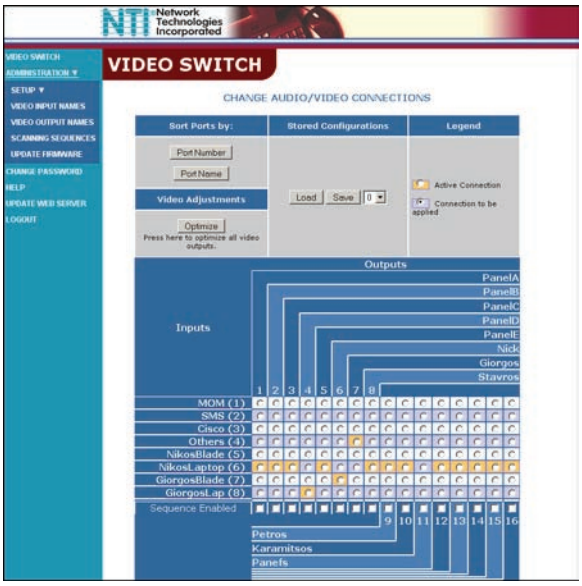
VEEMUX®

Configuration and Cable Illustration





Screenshot of the web server interface

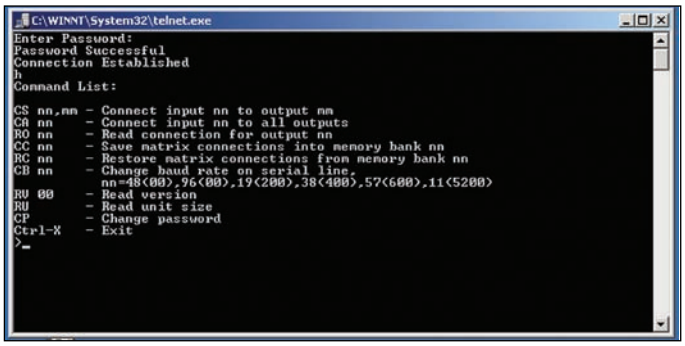
Built-In Control Methods

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.

Ethernet Control

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



Screenshot of the telnet interface

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.

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.

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.

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 (mm)
SM-8X8-C5AV-LCD	8	8	1RU	482x12x44
SM-8X16-C5AV-LCD	8	16	1RU	482x305x44
SM-16X8-C5AV-LCD	16	8	1RU	482x305x44
SM-16X16-C5AV-LCD	16	16	1RU	482x305x44
SM-32X8-C5AV-LCD	32	8	2RU	482x305x89
SM-32X16-C5AV-LCD	32	16	2RU	482x305x89

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
S-Video + audio	ST-C5SVA-L-600	ST-C5SVA-R-600
HDTV+stereo audio	ST-C5HDTV-L-600	ST-C5HDTV-R-600