XTENDEX® Series

ST-C5USBV-300(M)
ST-C5USBVA-300(M)
ST-C5USBV2A-300
300 FOOT USB KVM EXTENDER
Installation and Operation Manual

ST-C5USBV-300
(Desktop Model)

UMTINT-xx-MM
(Module cable- sold separately)

ST-C5USBV-300M
(Rackmount Module)

TRADEMARK

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CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.

Note: CAT5 connection cable used between NTI XTENDEX Series Local and Remote or any XTENDEX Series products should not be run underground, outdoors or between buildings.

⚠ *WARNING: Outdoor or underground runs of CAT5 cable could be dangerous and will void the warranty.*

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INTRODUCTION

The ST-C5USBV-300 USB Extender (XTENDEX) is designed to enable the relocation of a monitor, USB keyboard, and USB mouse from a USB CPU or NTI USB KVM switch by as much as 300 feet via CAT5 cable in addition to having a monitor, USB keyboard, and USB mouse connected locally. It is extremely simple to install and has been thoroughly tested to insure reliable performance. Through the use of Category 5 shielded or unshielded twisted-pair cable (STP/UTP) or Category 6 unshielded twisted-pair cable (UTP), it is possible to economically increase the flexibility of a computer system.

Options:
Audio Support- The ST-C5USBV-300 can be ordered to include support for extending self-powered stereo speakers by adding "A" to the model number (i.e. ST-C5USBV**A**-300)

2-Way Audio Support- The ST-C5USBV-300 can be ordered to include support for extending self-powered stereo speakers and a microphone by adding "2A" to the model number (i.e. ST-C5USBV**2A**-300)

Rackmount Modules- The ST-C5USBV-300/USBVA-300 can be ordered as rackmount modules (Remote and/or Local Units)- add "M" to the model number (i.e. ST-C5USBVA-300**M**). When ordering rackmount modules, also order the ST-C5RCK-12 Rackmount Extender Module Tray (see page 11).

Model	Mounting Method	Audio Support	# of Remotes Supported
ST-C5USBV-300	Desktop	N	1
ST-C5USBVA-300	Desktop	Y	1
ST-C5USBV2A-300	Desktop	Y (2-way)	1
ST-C5USBV-300M	Rackmount*	N	1
ST-C5USBVA-300M	Rackmount*	Y	1

*NTI ST-C5RCK-12 Rackmount Extender Tray required (sold separately)

Features

- Allows the placement of a monitor, USB keyboard, and USB mouse in a location where only these parts are needed without having the CPU there too, taking up valuable space and adding to room noise.

- Provides crisp and clear resolution when used in accordance with the chart below:

CAT5/5eSTP		CAT5/5E/6 UTP cable	
Resolution	Cable length	Resolution	Cable length
1024 x 768 /60Hz	300 feet	1024 x 768 /60Hz	300 feet
1280 x 1024 /60Hz	150 feet	1600 x 1200 /60Hz	150 feet
1600 x 1200 /60Hz	100 feet	1920 x 1440 /60Hz	100 feet

- Video quality is easily adjusted using keyboard controls

- Installation can be between a CPU and devices (keyboard, mouse, and monitor), between a CPU and NTI USB switch, or between a NTI USB switch and devices.

- Allows hot-plugging of keyboards and mice

- DDC Support (see page 18 for details)

Types of User Input Devices Supported:

- Compatible with all video resolutions up to WUXGA (dependant upon CAT5/5e/6 extension distance)
- All NTI USB switches
- Microsoft, Logitech or Kensington Wheelmouse or Trackball on MAC CPUs with manufacturer's drivers
- USB keyboard with Windows[®] layout
- USB keyboard with SUN layout
- USB keyboard with MAC layout
- USB Mouse - (up to 3 buttons)
- USB IntelliMouse[®] (scrollwheel)
- Logitech Cordless Elite Duo keyboard and mouse
- Crystal Vision keyboard with touchpad
- Gyration keyboard and mouse
- NTI USB-PS/2 Adapter
- NTI USB-SUN Adapter
- Logitech wireless (S510, EX110, diNovo, LX10)

- Kensington wireless (64379)
- MS Wireless Optical Desktop (3000 and 4000)
- HP P2360AA
- Fellowes wireless keyboard (KBR0108) with mouse (MSR0238T)
- Creative Desktop Wireless 8000

Operating Systems Supported

- Windows 98SE
- Windows 2000
- Windows ME
- Window XP
- Window Vista
- Window 7

- Windows 8 or greater
- Linux 7.1 2.2 Kernel or greater
- Sun-Solaris 8 or greater
- MAC OS 9.1 or greater
- HP UNIX J5000
- Free BSD

Limitations

- The XTENDEX will only work with USB keyboards and mice, other USB devices are not supported.

- PS/2 devices can be connected to the XTENDEX through an NTI USB-PS/2 adapter, however the translation keys described on page 15 will not function in this application.

- The XTENDEX can be used between two cascaded NTI switches, but the master switch in the configuration will not be able to list the CPUs connected to the extended slave.   The OSD menu in the extended slave would have to be used to monitor CPUs connected to it. (This can be done by configuring command mode for the slave switch with an Alternate OSD Command Sequence).

- The XTENDEX Local with audio support must be used with a Remote with audio support, and a Local without audio support must be used with a Remote without audio support. Locals and remotes with and without audio support cannot be mixed.

- A ST-C5USBV(A)-300(M) XTENDEX Local must be used with a ST-C5USBV(A)-300(M) Remote.   The ST-C5USBV(A)-1000S XTENDEX Local and Remote are not compatible with the ST-C5USBV(A)-300(M) Local and Remote.

MATERIALS

Materials supplied with the **ST-C5USBV-300(M)**:

- ✓ NTI ST-C5USBV-300(M) USB KVM Extender Local Unit
- ✓ NTI ST-C5USBV-300(M) USB KVM Extender Remote Unit
- ✓ 2-120VAC or 240VAC 50 or 60Hz-9VDC/1A AC Adapters
- ✓ Power supply mounting bracket (ST-C5USBV-300M or ST-C5USBVA-300M only)

Materials supplied with the **ST-C5USBVA-300(M)**:

- ✓ NTI ST-C5USBVA-300(M) USB KVM and Audio Extender Local Unit
- ✓ NTI ST-C5USBVA-300(M) USB KVM and Audio Extender Remote Unit
- ✓ 2-120VAC or 240VAC 50 or 60Hz-9VDC/1A AC Adapters
- ✓ Power supply mounting bracket (ST-C5USBV-300M or ST-C5USBVA-300M only)

Materials supplied with the **ST-C5USBV2A-300**:

- ✓ NTI ST-C5USBV2A-300 USB KVM and 2-Way Audio Extender Local Unit
- ✓ NTI ST-C5USBV2A-300 USB KVM and 2-Way Audio Extender Remote Unit
- ✓ 2-120VAC or 240VAC 50 or 60Hz-9VDC/1A AC Adapters
- ✓ 1- SA-3-MM 3 Foot Audio Cable with 3.5MM Stereo Audio Plugs

Additional materials may need to be ordered, depending upon the configuration:

- ➢ Video adapter for connection between the Local and a non-VGA SUN CPU (13W3M-15HDF)
- ➢ USBVEXT-3, 6, 10 (15HD Male-to-Female and USB Type A Male-to-Female Extension cable) if the Local Unit will be located further than 15" from the CPU or KVM switch
- ➢ CAT5/5e shielded/unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 21 for proper EIA/TIA 568B wiring method)
          -OR-
   CAT6 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 21 for proper EIA/TIA 568B wiring method)

For Rackmount Modules (ST-C5USBV-300**M** or ST-C5USBVA-300**M**) the following materials are **required- not supplied**:

- ➢ UMTINT-xx-MM - male 26-PIN SCSI II to male 15-pin HD, male USB Type A- for connecting the Local Unit to a CPU- available in 3, 6 and 10 foot lengths.

- ➢ UMTINT-xx-male 26-PIN SCSI II to female 15-pin HD, female USB Type A (x2)- for connecting the Local or Remote Unit to a monitor, keyboard, and mouse- available in 3, 6, 10 and 15 foot lengths.

- ➢ UMATINT-xx-MM-male 26-PIN SCSI II to male 15-pin HD, male USB Type A, and 3.5mm stereo plug- for connecting the Local Unit with audio support to a CPU- available in 3, 6 and 10 foot lengths.

- ➢ UMATINT-xx-male 26-PIN SCSI II to female 15-pin HD, female USB Type A (x2), and 3.5mm stereo jack- for connecting the Local or Remote Unit with audio support to a monitor, keyboard, mouse, and stereo speakers- available in 3, 6, 10 and 15 foot lengths.

Contact your nearest NTI distributor or NTI directly for all of your KVM needs at 800-742-8324 (800-RGB-TECH) in US & Canada or 330-562-7070 (Worldwide) or at our website at http://www.networktechinc.com and we will be happy to be of assistance.

FEATURES AND FUNCTIONS
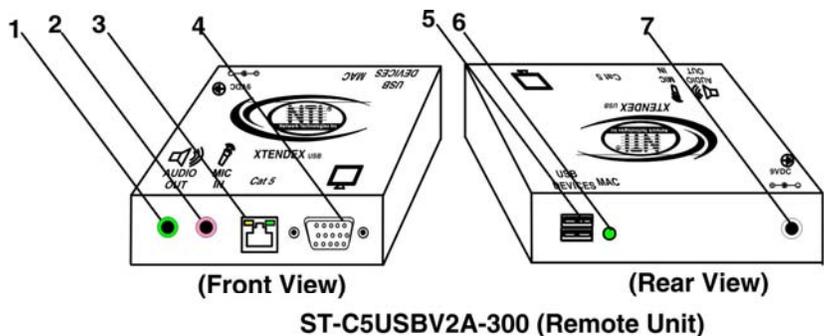
ST-C5USBV2A-300 (Remote Unit)

ST-C5USBV2A-300 (Local Unit)

ST-C5USBVA-300M
Remote Module
Front and Rear Views
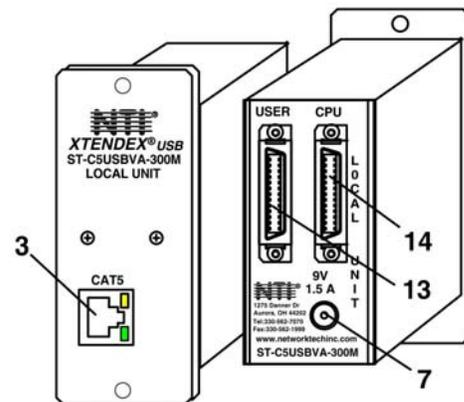
ST-C5USBVA-300M
Local Module
Front and Rear Views

#	LABEL	CONNECTOR/LED	DESCRIPTION
1	AUDIO OUT	Audio Jack	for connecting to remote speakers (models with audio support only)
2	MIC IN	Audio Jack	for connecting to microphone (models with 2-way audio support only)
3	CAT5	RJ45 Connector	for connection of CAT5 cable between Local Unit and Remote Unit
3a	none	Green LED	illuminates when power has been supplied to the unit
3b	none	Yellow LED	blinks when there is valid communication between the Local and Remote Units.
4	VGA Monitor (symbol)	HD15 Female	for connection of video cable from remote monitor
5	USB DEVICES	USB Type A dual	for connection of remote user USB device(s)
6	MAC	Green LED	for visual indication of connection to a MAC CPU
7	**9VDC**	2.1x5.5mm Power Jack	for connection of power supply
8	MIC TO CPU	Audio Jack	for connection of microphone cable to PC
9	DDC Update	pushbutton	press to update the PC with DDC info from local monitor
10	Monitor Symbol	Video Cable	15HD male for connection to video connector of CPU
11	USB Symbol	Devices Cable	USB Type A male connector for connection to CPU
12	none	Audio Plug	for connecting to CPU speaker line out (models with audio support only)
13	USER	.05 SCSI II Female	for connecting cable between module and the user devices
14	CPU	.05 SCSI II Female	for connecting cable between the module and the CPU

4

PREPARATION FOR INSTALLATION

- A location should be chosen for the monitor, mouse, and keyboard that also has space to mount the Remote Unit within the distance provided by the cables from the monitor, mouse, and keyboard. If extension cables are needed, contact NTI for the cables required. If a local user will be connected, a proper location must be chosen for these devices too.

- The CAT5 cable(s) must be run to the locations where the Remote and Local Units will be placed. Be careful to route the cables away from any sources of magnetic fields or electrical interference that might reduce the quality of the video signal (i.e. AC motors, welding equipment, etc.). **NOTE**: If CAT5 cable is already installed in the wall and there are RJ45 wall outlets, it will be necessary to obtain male-to-male straight through connection cables long enough to reach from the wall outlets to the mounting locations of the Remote and Local Units.

- A properly grounded, polarized, and preferably surge-protected 120V or 240V electrical outlet (depending on the AC adapter being used) must be installed close enough to the mounting location of the Remote Unit and monitor to plug them into.

- All cables should be installed in a fashion that will avoid stress on their connections to the equipment. Extended lengths of cable hanging from a connection may interfere with the quality of that connection. Secure cables as needed to prevent this.

- Properly shut down and disconnect the power of the CPU and monitor. Disconnect the monitor, keyboard, and mouse. If other equipment is involved whose connections are being interrupted, be sure to refer to the instruction manuals for that equipment for proper disconnection and re-connection procedures before proceeding.

Note: CAT5 connection cable used between NTI XTENDEX Series Local and Remote or any XTENDEX Series products should not be run underground, outdoors or between buildings.

⚠ *WARNING: Outdoor or underground runs of CAT5 cable could be dangerous and will void the warranty.*

This product is equipped with grounding hardware to prevent interference from sources of electrical noise that could interfere with the normal operation of the XTENDEX or damage it. **Use either the crimp-on lug or solder terminal** to secure a properly grounded wire to the XTENDEX.
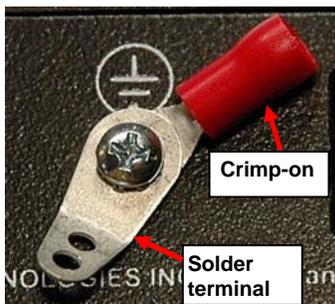
INSTALLATION

The Local Unit

Connect to the CPU

1. Plug the cables of the Local Unit into the back of the CPU. (See Figure 1.)

    a) Connect the blue 15HD cable from the Local Unit to the female VGA port on the back of the CPU.

    b) Connect the USB Type A cable from the Local Unit to a female USB Type A port on the back of the CPU.

Note: If a SUN CPU is being connected, depending upon the video connector of the SUN CPU, it may be necessary to attach an NTI #13W3M-15HDF (SUN video port-to-VGA adapter) to the video port on the CPU first, and then connect the video cable to the adapter.
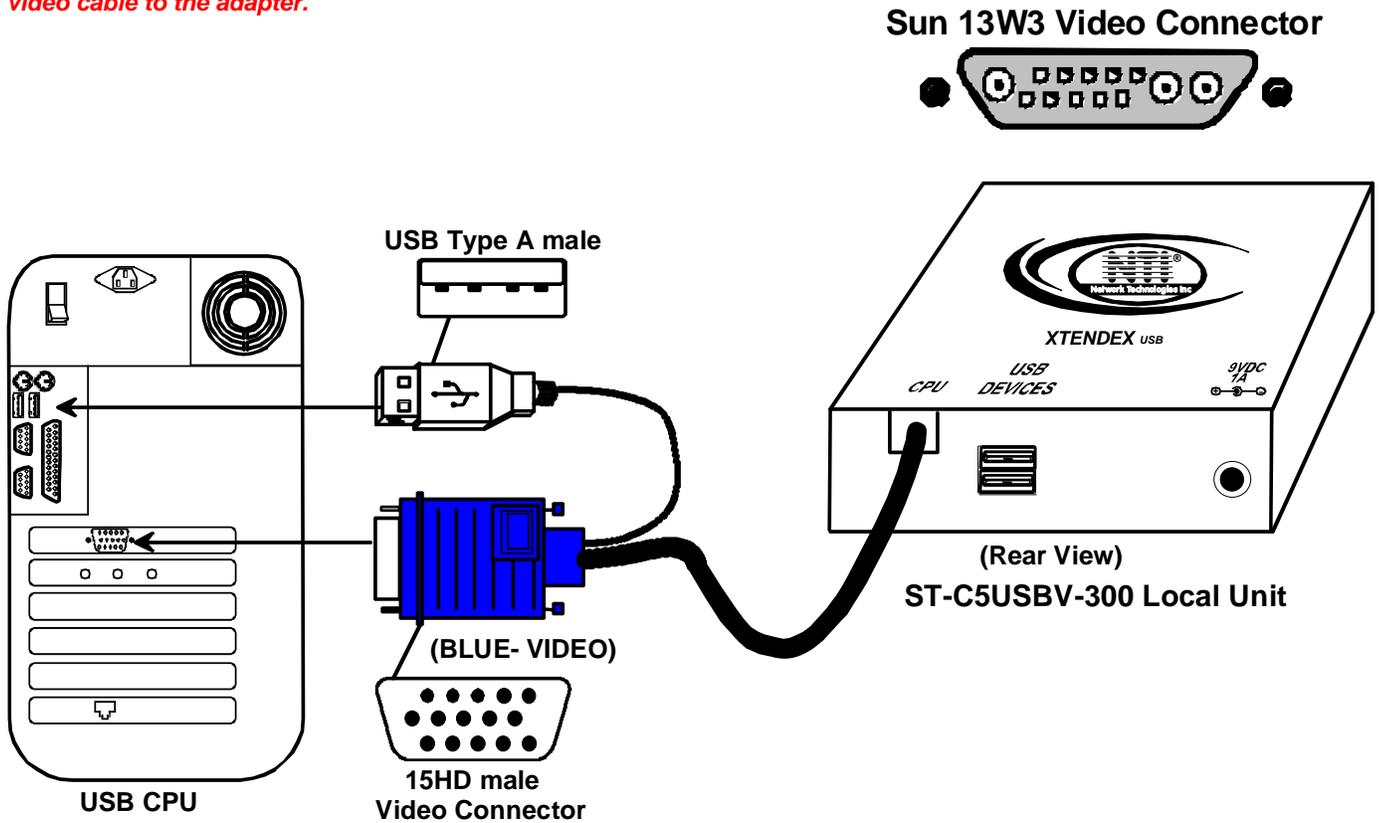
Figure 1- Connect the Local Unit to a CPU

    c) If the Local Unit has Audio support (ST-C5USBVA-300 only), connect the black 3.5mm stereo plug into the "line out", "speaker", or "headphones" jack on the back of the CPU. (See Figure 2)

Notes:
If all 3 jacks are available, use the jack marked "line out".

The "line out" jack is typically lime green and may be marked with this symbol

The "speaker" jack is typically orange, and may be marked with this symbol

The "headphones" jack may be marked with this symbol

    d) If the Local Unit has 2-way audio support (ST-C5USBV2A-300), connect the 3 foot audio cable (supplied) between the "MIC to CPU" jack and the microphone or "line in" port (pink) on the CPU.
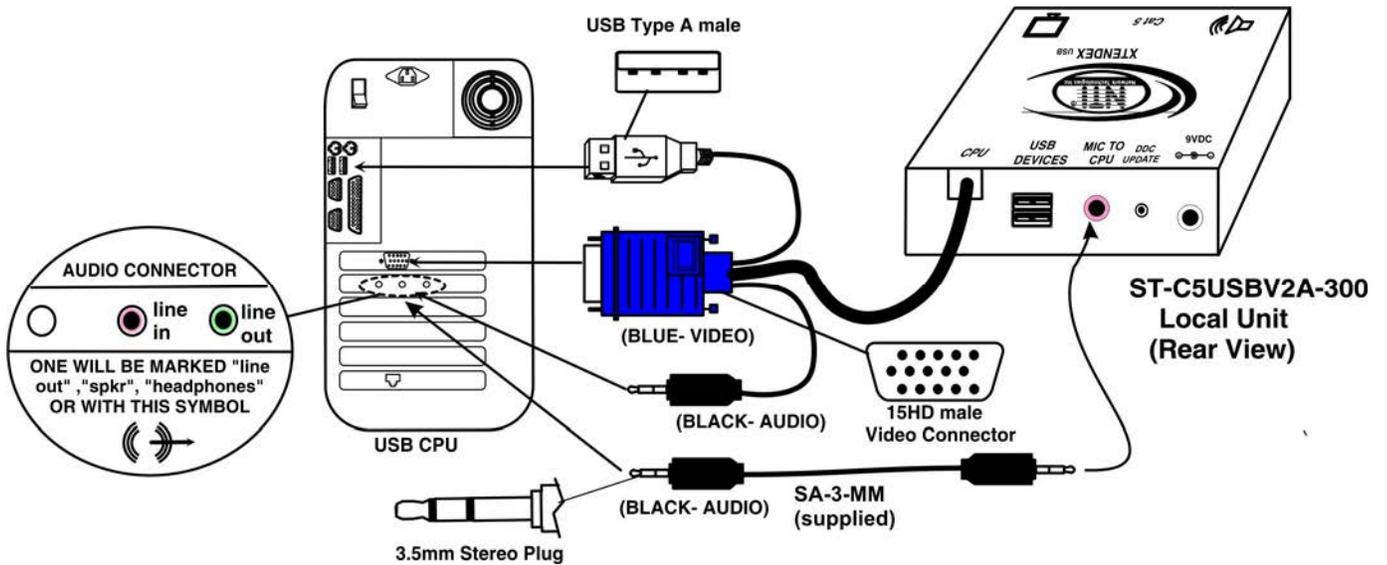
Figure 2- Local unit with audio support connects to CPU

Connect the Local Devices

If desired, connect the local user devices to the Local Unit as shown in Figure 3.

1. Connect a USB keyboard and mouse to the USB type A female connectors on the Local Unit.

2. Connect a monitor to the 15HD female connector on the Local Unit.
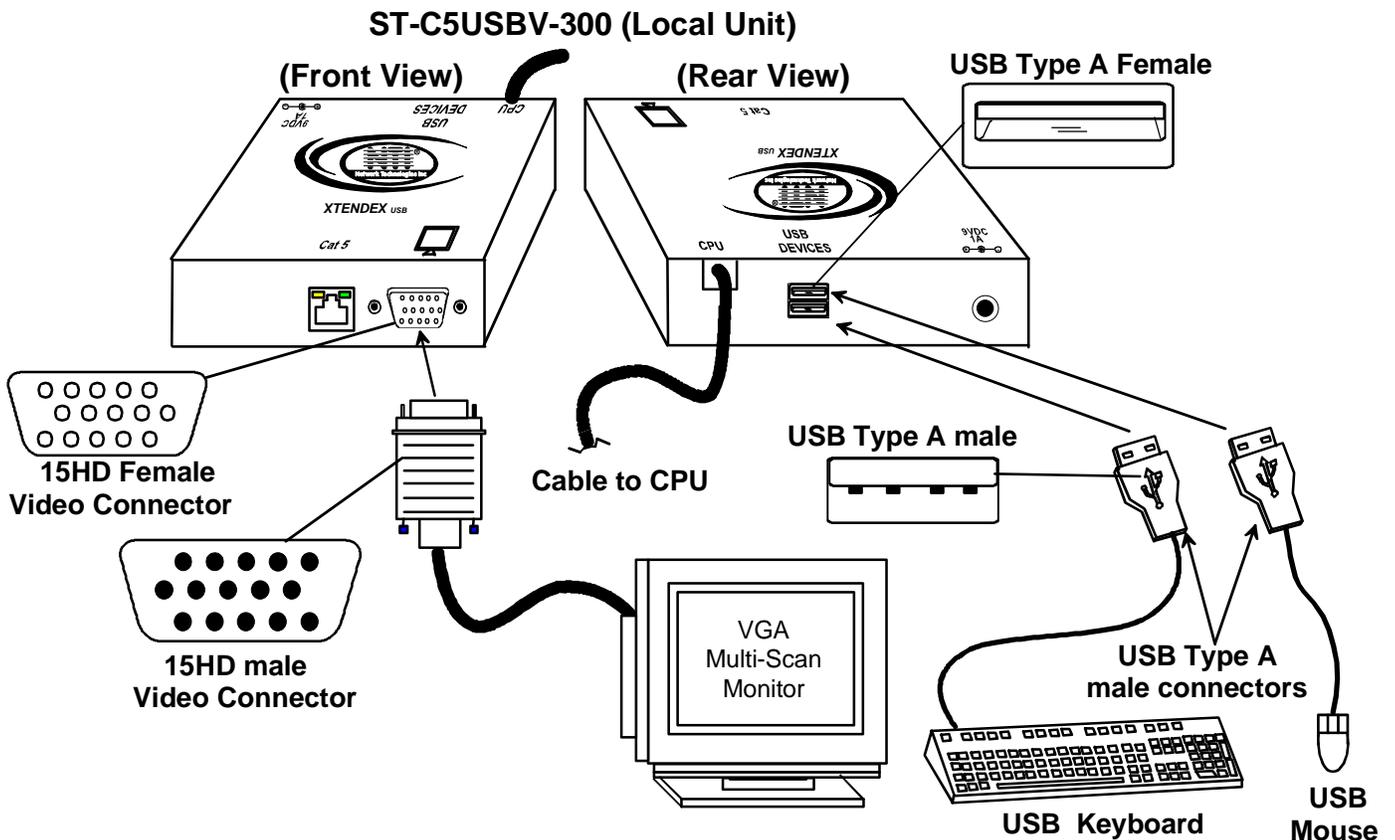
Figure 3- Connect local user devices to the Local Unit

3. If the Local Unit has audio support (ST-C5USBVA-300) , connect the cable from the local self-powered stereo speakers to the 3.5mm stereo audio "AUDIO OUT" jack on the Local Unit. (See Figure 4)

4. If the Local Unit has 2-way audio support (ST-C5USBV2A-300), connect a microphone to the pink jack labeled "MIC IN".

ST-C5USBV2A-L-300 (Local Unit)
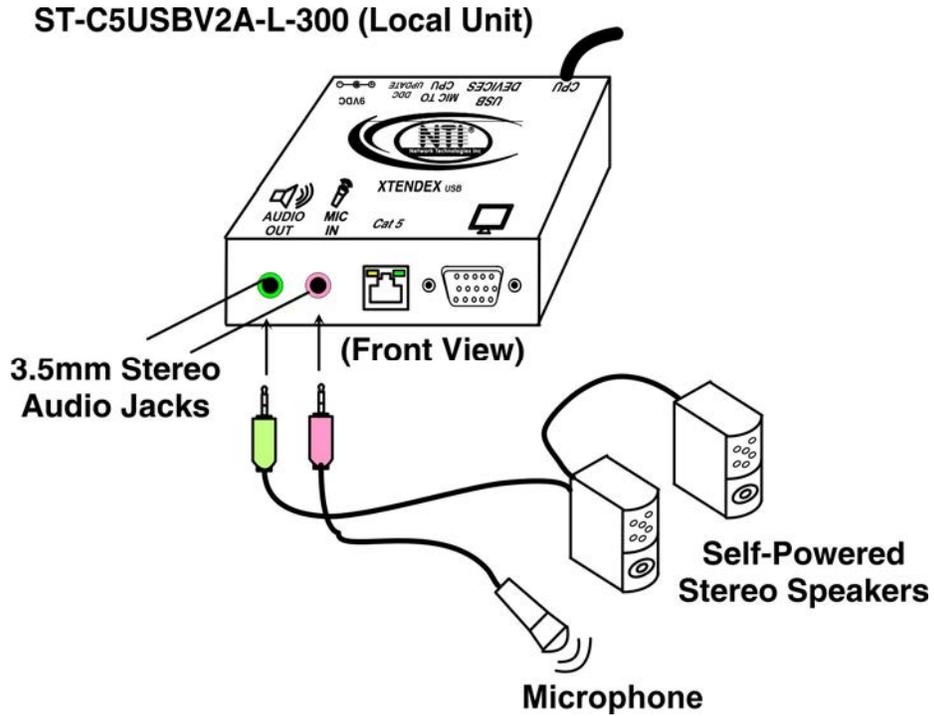
Figure 4- Connect stereo speakers to XTENDEX Local Unit with audio support

Connect the CAT5 Cable

Connect the CAT5 cable to the "CAT5" port on the rear of the Local Unit (see Figure 5). (If an RJ45 wall outlet is being used, connect the other end of the extension cable to it.)   When properly inserted the cable end should snap into place.

ST-C5USBV-300 (Local Unit)
(Front View)

CAT5 Cable to Remote
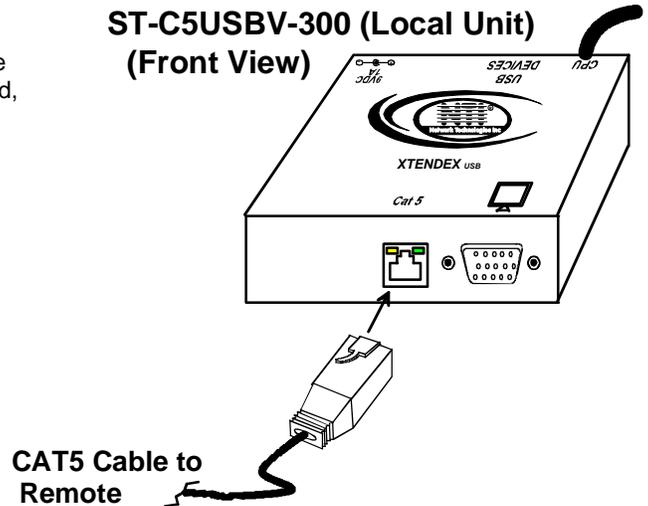
Figure 5- Connect the CAT5 cable to the Local Unit

The Remote Unit

Connect the Remote Devices

Position the Remote Unit such that the CAT5 cable, the monitor cable, the keyboard and mouse, and the AC adapter power connector can each reach the Remote Unit comfortably.

1. Connect the monitor cable to the 15HD female VIDEO port on the back of the Remote Unit.   (See Figure 6)

2. Connect the devices to the Remote Unit.

    a. Connect the USB keyboard cable (or wireless adapter) to one of the USB Type A female ports labeled "USB DEVICES" on the back of the Remote Unit. (Either one will work.)

    b. Connect the USB mouse cable (or wireless adapter) to the remaining USB Type A female port on the back of the Remote Unit.
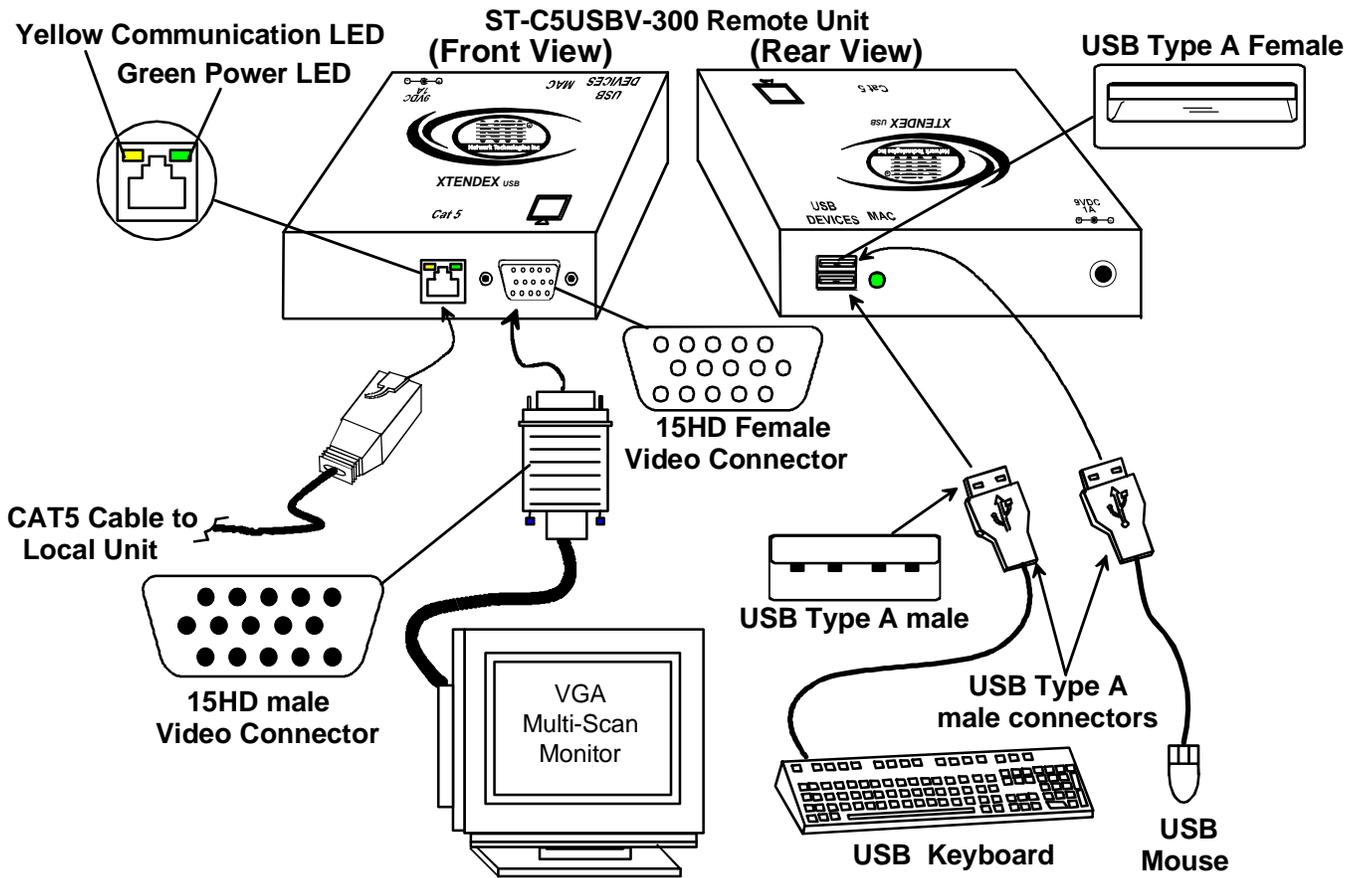
Figure 6- Connect the Monitor and Devices to the Remote Unit

4. If the Remote Unit has audio support (ST-C5USBVA-300) , connect the cable from the remote self-powered stereo speakers to the 3.5mm stereo audio "AUDIO OUT" jack on the Remote Unit. (See Figure 7)

5. If the Remote Unit has 2-way audio support (ST-C5USBV2A-300), connect a microphone to the pink jack labeled "MIC IN".
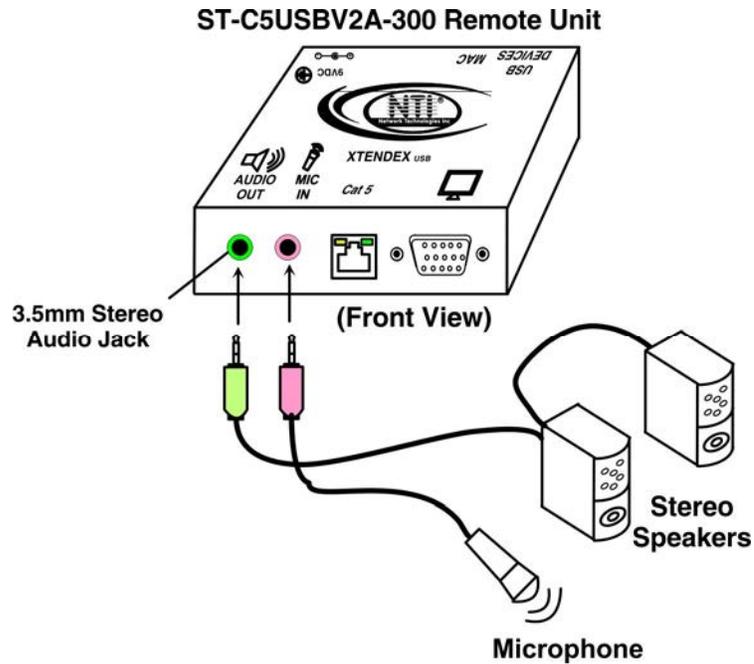

Figure 7- Connect remote self-powered speakers and microphone to Remote Unit

Connect the CAT5 cable

Connect the CAT5 cable to the "CAT5" port on the rear of the Remote Unit (see Figure 8). (If an RJ45 wall outlet is being used, connect the other end of the extension cable to it.) When properly inserted the cable end should snap into place.

⚠ *WARNING: Never connect the ST-C5USBV-300 Extender to an Ethernet card, Ethernet router, hub or switch or other Ethernet RJ45 connector of an Ethernet device. Damage to devices connected to the Ethernet may result.*
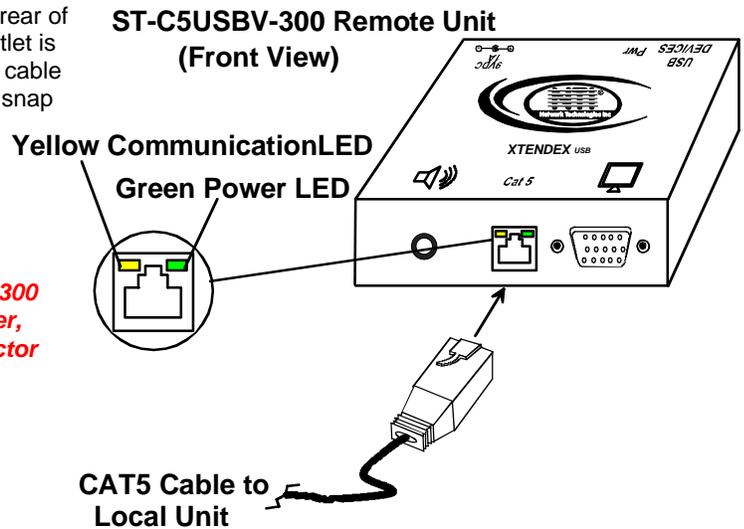
Figure 8- Connect CAT5 cable to the Remote Unit

Rackmount Modules (optional)

If ST-C5USBV-300M or ST-C5USBVA-300M XTENDEX rackmount modules (Local and/or Remote modules) are being installed, then an ST-C5RCK-12 Rackmount Extender Module Tray must be used (sold separately) to mount the modules to a RACK.   The ST-C5RCK-12 provides a convenient mounting method for up to 12 Local and /or Remote XTENDEX modules.

Note: Rackmount Local modules are compatible with rackmount Remote modules or desktop Remote units.

Mount the ST-C5RCK-12 Rackmount Extender Module Tray

1. The ST-C5RCK-12 Rackmount Extender Module Tray was designed to be directly mounted to a rack. It includes a mounting flange to make attachment easy.

2. Install 4 cage nuts (supplied) to the rack in locations that line up with the holes in the mounting flange on the tray. Then secure the tray to the rack using four #10-32 screws (supplied). Be sure to tighten all mounting screws securely.
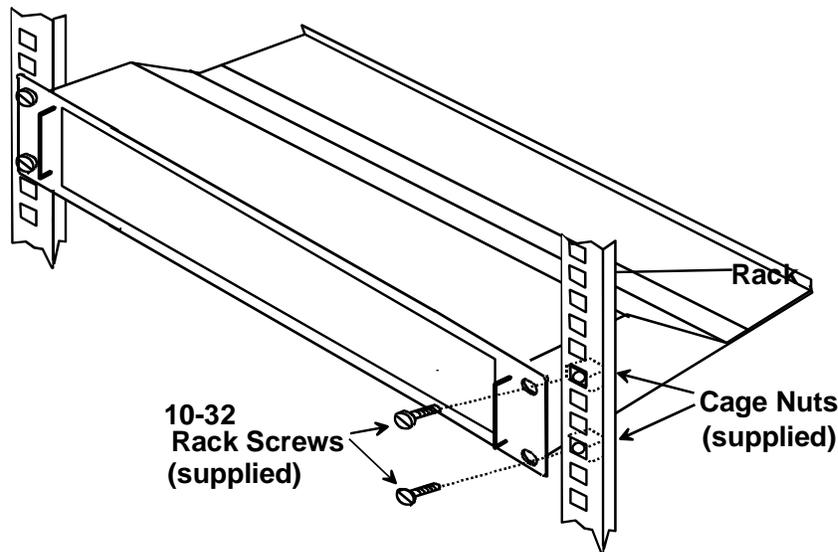
Figure 9- Mount ST-C5RCK-12 Extender Module Tray to a rack

3.   Slide each module into the tray and line up the holes in the mounting plate on the module with corresponding holes in the tray. Secure the module(s) using the two screws provided. Blank plates and screws are provided to cover empty module spaces.

Frontview of ST-C5RCK-12 with XTENDEX Extender Modules

Secure XTENDEX module(s) to the ST-C5RCK-12 using the screws provided.
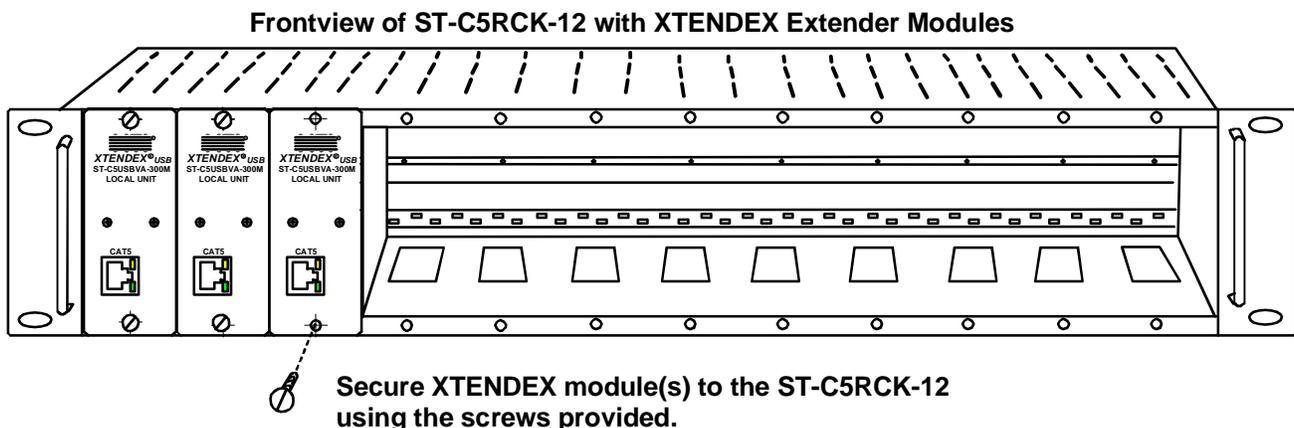
Figure 10- Secure each module to the tray

4. Secure the power supply for each module to the power supply/cable management shelf at the rear of the tray using the bracket and screw supplied.

Rearview of ST-C5RCK-12 with XTENDEX Extender Modules

Plug power connector into Extender module

Power supply/cable managment shelf

Connect power cord to power supply here

Power supply mounting bracket (supplied with each module)

Secure each power supply to the tray using the bracket and screw provided.
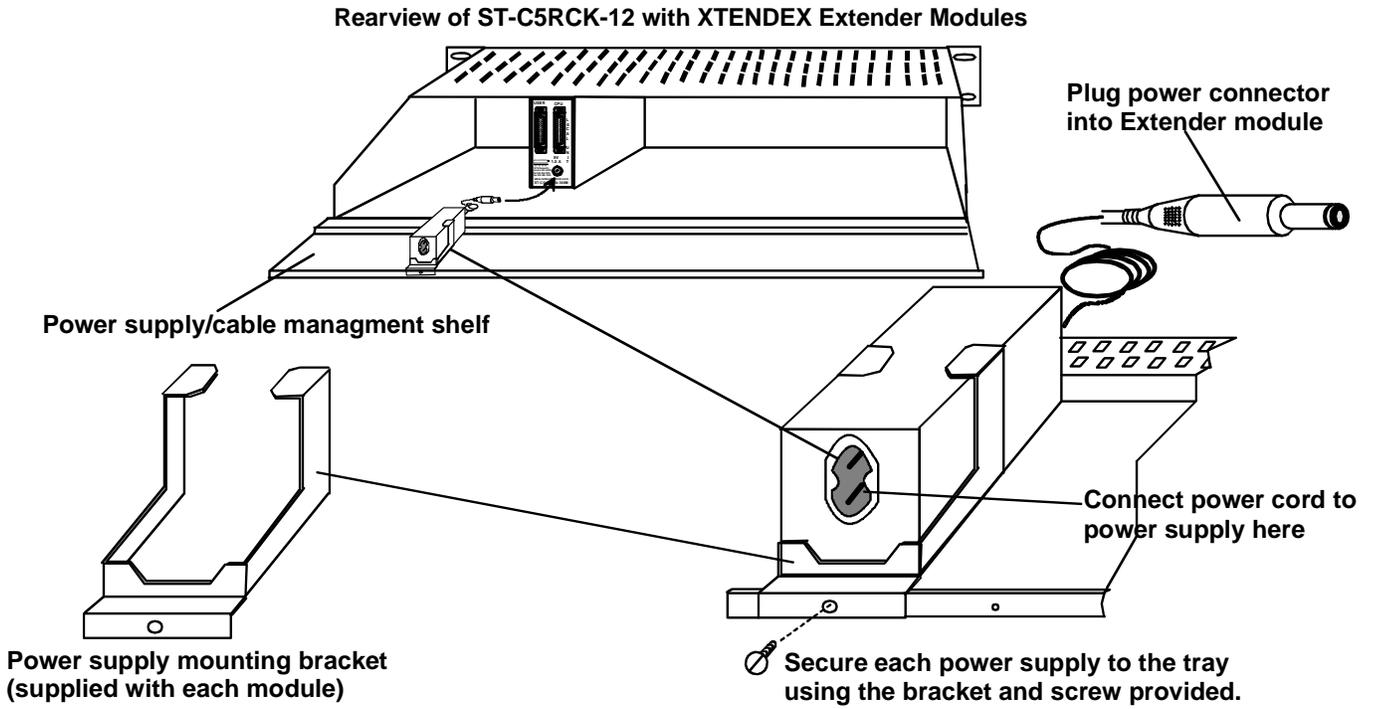
Figure 11- Secure each power supply to the tray

Connect the CPU

Connect a UMTINT-xx-MM (or UMTINTA-xx-MM if module has audio support) to the CPU, and then to the Local Unit at the connector marked "CPU".   Make sure all connections are firmly seated. (xx= 3, 6, 10, or 15 foot length)

USB Type A male

UMTINTA-3/6/10/15-MM

0.05 SCSI II series

Connect to ST-C5USBVA-300M Local Unit at "CPU"

AUDIO CONNECTOR

line out

ONE WILL BE MARKED "line out" ,"speaker", "headphones" OR WITH THIS SYMBOL

3.5MM-Stereo Jack

USB CPU

15HD male Video Connector

3.5mm Stereo Plug

USER   **CPU**

L
O
C
A
L

U
N
I
T

9V 1.5 A

NTI®
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Aurora, OH 44202
Tel:330-562-7070
Fax:330-562-1999
www.networktechinc.com
ST-C5USBVA-300M

REAR VIEW ST-C5USBVA-300M (Local Unit)

Figure 12- Connect cable between CPU and module

Connect the Devices

Connect a UMTINT-xx (or UMTINTA-xx if module has audio support) to the monitor, keyboard, mouse, and speakers (if supported), and then to the Local or Remote Unit at the connector marked "USER". Make sure all connections are firmly seated. (xx= 3, 6, or 10 foot length)

0.05 SCSI II series

UMTINTA-3/6/10

15HD-Female Video Connector

VGA Multi-Scan Monitor

Connect to ST-C5USBVA-300M Local Unit or Remote Unit at "USER"

USER

USB-A-Female

USB Keyboard

R
E
M
O
T
E

U
N
I
T

USB-A-Female

3.5MM-Stereo Jack

USB Mouse

9V 1.5 A

1275 Danner Dr
Aurora, OH 44202
Tel:330-562-7070
Fax:330-562-1999
www.networktechinc.com
ST-C5USBVA-300M

REAR VIEW ST-C5USBVA-300M (Remote Unit)

Stereo Speakers

Figure 13- Connect cable between user and module

13

Connect the CAT5 cable

Connect the CAT5 cable to the "CAT5" port on the front of the Local Unit (see Figure 14). When properly inserted the cable end should snap into place. Connect the other end of the cable to the "CAT5" port on the Remote Unit.

⚠ **WARNING: Never connect the ST-C5USBV-300M Extender to an Ethernet card, Ethernet router hub or switch or other Ethernet RJ45 connector of an Ethernet device.   Damage to devices connected to the Ethernet may result.**
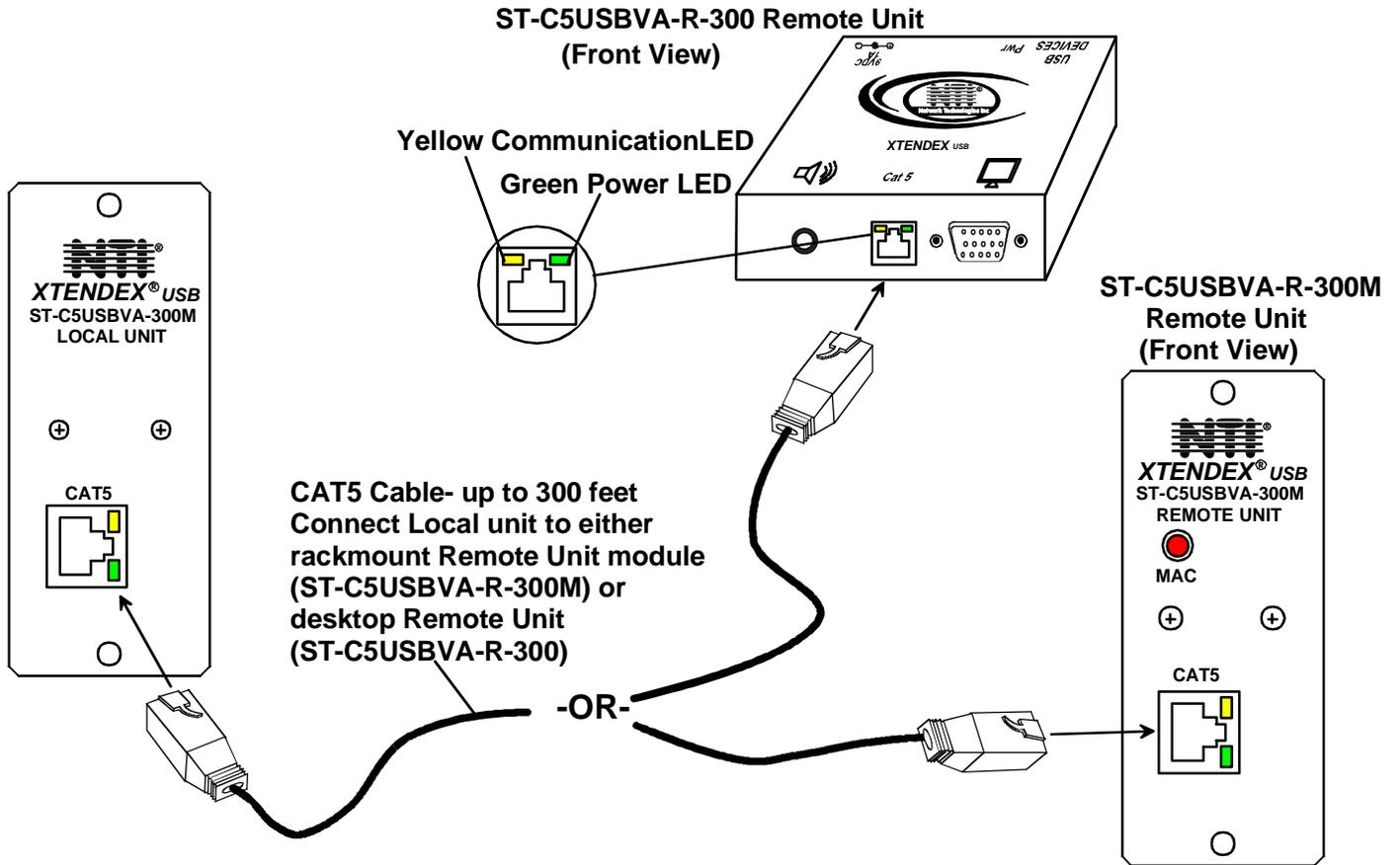
**Figure 14- Connect the CAT5 cable between the Local and Remote Units**

Plug-in and Boot Up

1. Plug the power cord(s) from the monitor(s) into power outlet(s).

2. Connect the AC adapter power connectors to the 9VDC ports on the Remote and Local Units.   (AC adapter shown in Figure 15)

3. Plug the AC adapters into power outlets. The "Power" LED (Green) on the CAT5 connector of each unit should illuminate, indicating that a proper power connection has been made.

4. Turn ON the CPU and monitor(s). The CPU and monitor(s) should each react as if they were directly connected to each other.   The yellow communication LEDs on the Remote and Local Units should blink indicating there is proper communication between them.

Note: A loss of signal (blank screen) may be experienced for an instant during the auto-compensation process after powering-up (ST-C5USBVA model only).   This may also occur if the XTENDEX senses a loss of or weak signal connection in the CAT5 cable.
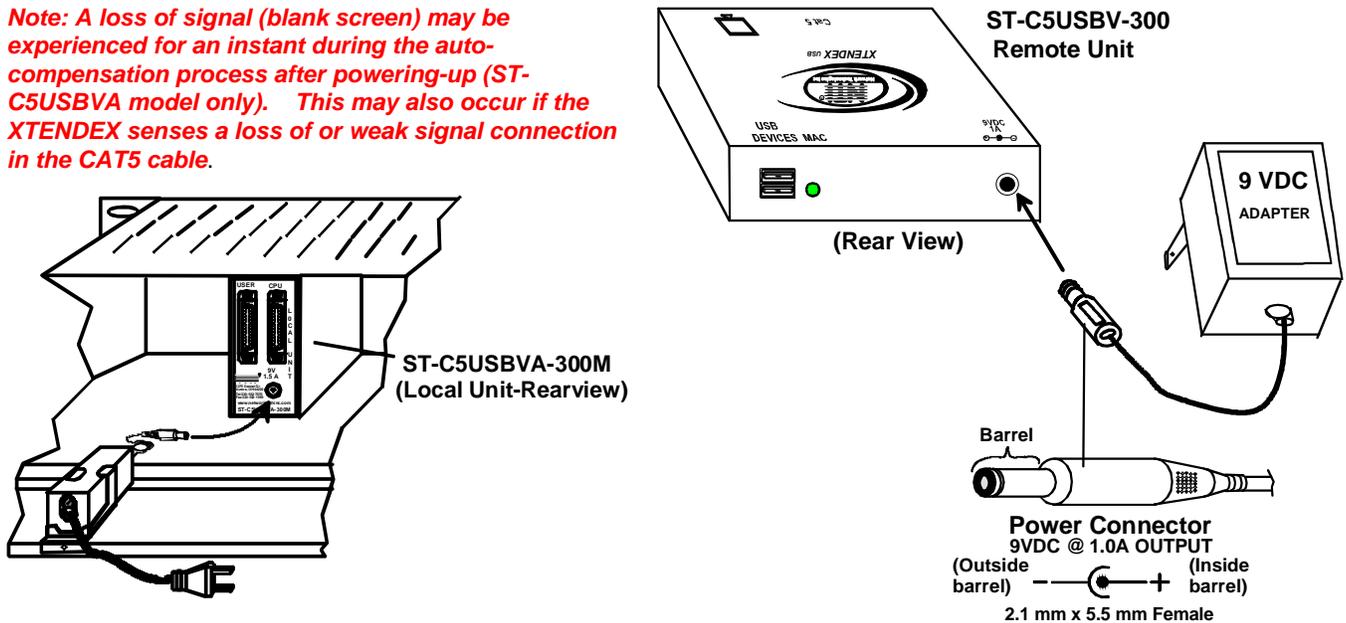

Figure 15- Connect AC adapters

Note: When using the microphone feature (ST-C5USV2A-300 model only), if both microphones are used at the same time (one at the Local Unit and one at the Remote Unit), the audio data from both microphones will be "mixed" and sent to the PC as one combined data stream.   You will hear the combined audio from each through the speakers.

COMMAND MODE

The XTENDEX has two areas of user control that can be used as needed.   The user can adjust video quality (described below), or enable/disable MAC mode (see page 17)   These controls are accessed by entering Command Mode.

To enter Command Mode, simultaneously press the left and right <Shift> keys on the keyboard connected to the Remote Unit.   The keyboard LEDs will illuminate.

To exit Command Mode, press <Esc>.

Automatic Video Quality Adjustment (ST-C5USBVA/2A-300 only)

Video quality adjustment is done automatically to assure the image is as clear as possible.

Note: If a different type of cable is used (i.e. shielded cable) and the image is not crisp and clear, there may be a need for fine adjustment. For fine adjustment, follow the same procedure as described under "Manual Video Quality Adjustment" below.

Manual Video Quality Adjustment (ST-C5USBV-300 only)

 It is possible that on initial startup the image on the monitor will not be as crisp as the image normally is. This is due to the frequency characteristics of the CAT5 cable.   It may be necessary to enter Command Mode (described above) and press the <Right Arrow> or <Left Arrow> keys on the remote keyboard until the image is crisp and clear.

- Press <Right Arrow>key if the image is not crisp and clear enough.

- Press the <Left Arrow> key if the image has been over-corrected (such that horizontal lines appear to trail or shadow at the edge of an open window).

- A momentary press of either key will make a minor change in the image.

Ultimately, the image quality should improve to a satisfactory level.   Once the adjustment is made, it should not be necessary to change it again, as the new settings are stored in memory and become the default settings with each startup.   To exit Command Mode, press <Esc>.

Note: For additional quality adjustment, it may be necessary to adjust the brightness and contrast settings of the monitor.

Note: The video quality adjustment procedure can only be performed from the keyboard connected to the Remote Unit.

MAC Mode

MAC Mode enables the user to connect the Local Unit to a MAC CPU.   MAC Mode configures the Local Unit for passing mouse information to the MAC CPU. This is useful when the user wants to use mouse drivers provided by the mouse vendor, which allows the use of programmable functions for each mouse button. The Local Unit can be configured whenever necessary.

NOTE: When the port is connected to a PC or SUN CPU, MAC Mode should be OFF (the default setting).

To do this;
1. Enter Command Mode. (Simultaneously press the left and right <**Shift**> keys on the keyboard connected to the Remote Unit.   The keyboard LEDs will illuminate.)
2. If a MAC CPU is connected, press the <**M**> key. The keyboard LEDs will momentarily flash and the "MAC" LED on the Remote Unit will illuminate to indicate MAC Mode is ON. (See Figure 16)
3. To reconnect the XTENDEX to a SUN or Windows CPU (the default setting) , press the <**M**> key once again and the "MAC" LED will go OFF.

ST-C5USBV-300
Remote Unit
(Rear View)

**MAC port configuration LED**
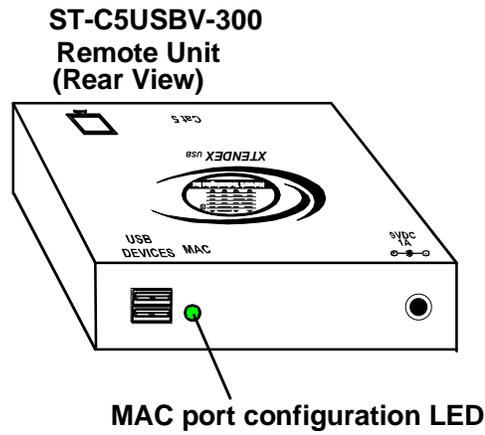
Figure 16- MAC LED

After setting, the configuration is stored in memory and will be retrieved whenever the XTENDEX is powered ON.
Note: MAC Mode can only be enabled from the keyboard connected to the Remote Unit.

DDC SUPPORT

DDC support allows the CPU to detect the video capability of your monitor by transferring EDID data from your monitor to the CPU.

Automatic EDID Updates for ST-C5USBV(A)-300(M)

The 15HD connector on the **ST-C5USBV(A)-300(M)** provides local video as well as DDC support. The EDID data is updated automatically at initial power-ON or whenever a different monitor is connected to the Local Unit. **DDC is only updated from the monitor connected to the Local Unit.** For that reason, it is recommended that the monitor connected to the Remote and Local Units be the same model. The Local Unit and the monitor must both be powered-ON prior to the CPU in order to update the EDID data.

Note: The ST-C5USBV(A)-300(M) Local Unit will not store the EDID data. A monitor must be connected to the Local Unit each time the CPU is power-cycled in order for EDID data to remain current.

Improved DDC Update Feature

The newest design of the ST-C5USBV(2A)-300 includes the ability to update DDC information from Command Mode (Remote keyboard only) or from a "DDC Update" button on the Local Unit. (If your ST-C5USBV/USBVA/USBV2A-300 Local Unit has this button, then this instruction is applicable.) The procedure to update DDC information (below) must be performed only once at initial setup (provided the monitor is not changed). Both the Local and Remote Units must be powered in order to update the DDC information. The DDC information will be collected from both the Local and Remote monitors (both must be powered-ON) and the resolutions that are common to both will be sent to the connected PC.

Keyboard LED Indications:

Adjustment Mode	NumLock	CapsLock	ScrollLock
Command Mode ON	Blink	Blink	Blink
DDC Update	Off	Solid	Off
Command Mode OFF	Normal state	Normal state	Normal state

To update DDC information from Command Mode;
1. Command Mode can be enabled by pressing two keys on the Remote Unit keyboard at the same time; `<LEFT SHIFT> + <RIGHT SHIFT>`. This will only work from the Remote Unit keyboard. Press `<Esc>` at any time to exit Command Mode.

The three keyboard LEDs (NumLock, CapsLock, and ScrollLock) on the Remote Unit keyboard will blink at the same time to indicate entrance into Command Mode. (See chart above for LED indications.)

2. press `<D>` to enter DDC Update mode.
3. press the `< Left Arrow> + <Right Arrow>` keys simultaneously to cause DDC information to be updated
4. press <Esc> to exit Command Mode
5. Restart the CPU.

To update DDC using the DDC Update Button
Alternatively, DDC information can also be updated by pressing the DDC Update button. With the Local and Remote units and monitors connected to the each powered ON, press the DDC Update button on the Local Unit.

Within 1 second, the DDC information common to both monitors will be provided to the connected PC.
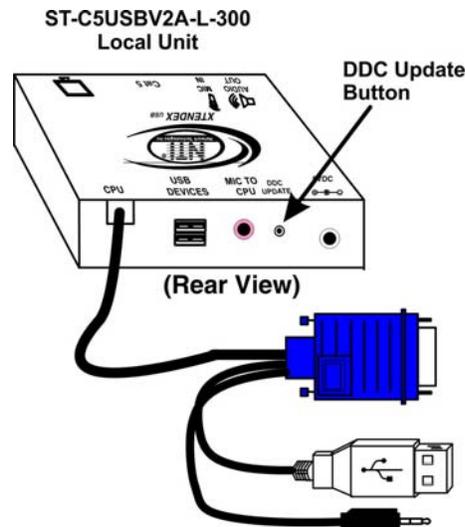

Figure 17- DDC Update Button

Note: It is recommended that the monitors connected to the Remote and Local units be of the same make and model.

Attention: Some graphics cards will not send a video signal to the monitor until it has received the DDC information from the monitor.   In this case, the monitor may not display anything until the DDC information is read. This may occur if this is the first time the monitor is being connected to the XTENDEX. The DDC information must be updated in the XTENDEX to achieve video using the procedure outlined above.

If the monitor is changed to a different model than was initially installed, the update procedure must be repeated, either through Command Mode or using the "DDC Update" button on the Local Unit.

COMMON APPLICATIONS

Figure 11 (below) illustrates three common applications for the **ST-C5USBV-300** USB KVM Extender.
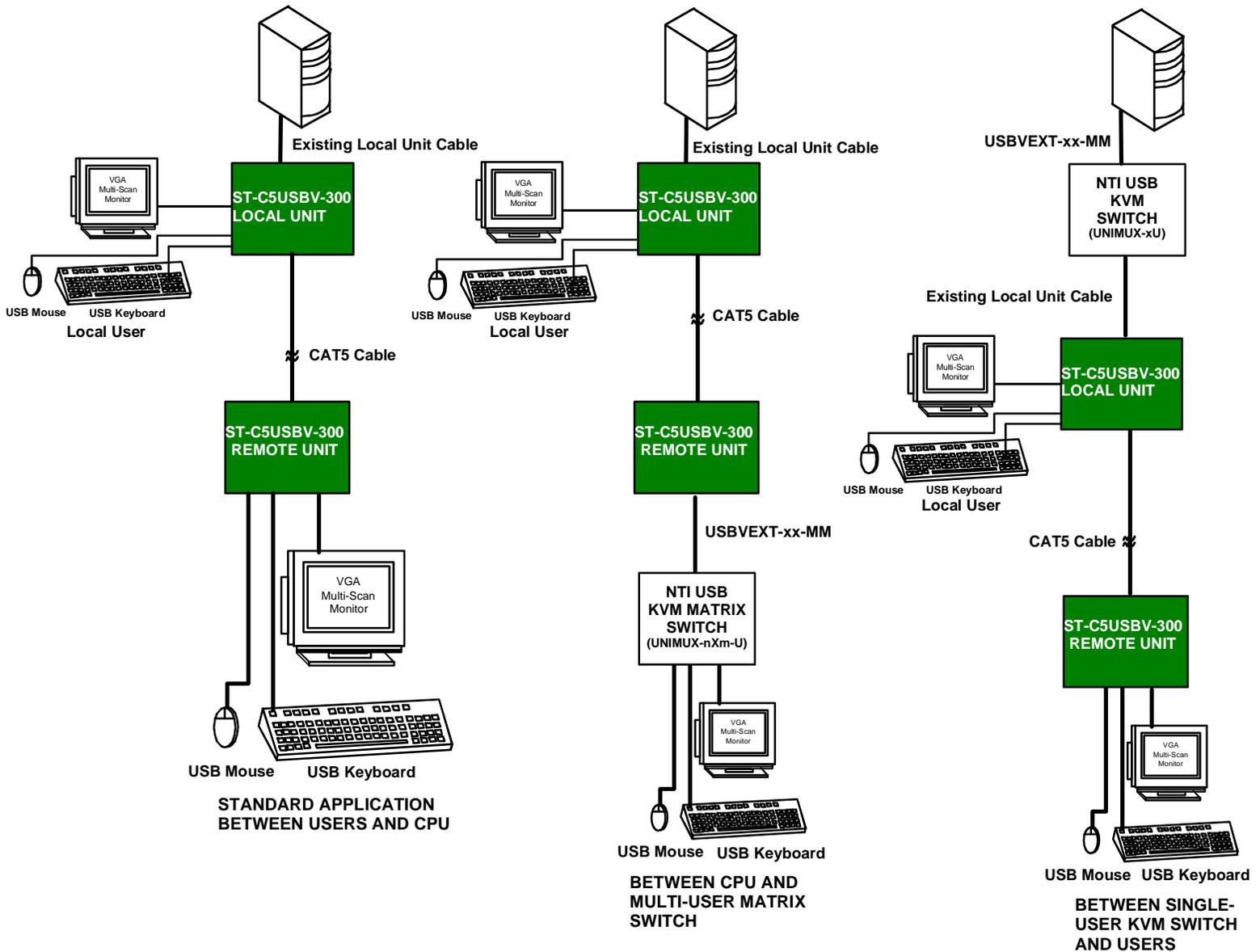

Figure 18- Examples of common applications for the ST-C5USBV-300 USB KVM Extender

TECHNICAL SPECIFICATIONS

Maximum Resolution w/ CAT5/5e/6 UTP (refresh frequency 60Hz)	1024 x 768 @ 60Hz- up to 300 feet 1600 x 1200 @ 60Hz- up to 150 feet 1920 x 1440 @ 60 Hz- up to 100 feet
Maximum Resolution w/ CAT5/5e STP (refresh frequency 60Hz)	1024 x 768 @ 60Hz- up to 300 feet 1280 x 1024 @ 60Hz- up to 150 feet 1600 x 1200 @ 60Hz- up to 100 feet
Video Compatibility	WUXGA,UXGA,SXGA, XGA, SVGA, VGA
Video Quality Adjustment	Variable for up to 300 feet of CAT5 cable
Video Coupling	DC
Video Connectors	HD15 male to CPU HD15 female to local and remote monitors
Sync Types Supported	Separate and composite TTL Level
Video Signal Type	Analog RGBHV,RGBS
Maximum Input/Output Levels	1.45Vp-p (no offset)
Input / Output Impedance	75 Ohms
Input Horizontal Frequency Range	15kHz to 130 kHz
Input Vertical Frequency Range	30 Hz to 150 Hz
Keyboard/Mouse Connectors	USB Type A female- to local and remote keyboard/mouse USB Type A male- to CPU
Interconnect Cable	CAT5/5e Solid UTP/STP EIA/TIA 568B wiring w/ male RJ45 connectors - OR- CAT6 Solid UTP EIA/TIA 568B wiring w/ male RJ45 connectors
Remote and Local Unit Power	120V or 240V (50 or 60Hz) 9VDC/1.0A AC Adapters
Operating Temperature Range	+10°C to +40°C
ESD protection	Complies with EN61000-4-2 Specification
CE Mark	Complies with EN55022
RoHS	Compliant
Dimensions WxDxH (In.) (Local or Remote)	3.5x3.1x1.2 (Desktop models)
Dimensions WxDxH (In.) (Local or Remote)	1.4x6.8x3.5 (Rackmount modules)
AUDIO	
Signal Type	Line Level, stereo, unbalanced

Connectors	Local Unit: 3.5mm Stereo Plug, Pigtail,
	                3.5mm Stereo Jack, PCB
	                3.5mm Stereo Jack-Pink x2, PCB (ST-C5USBV2A-L-300)
	Remote Unit: 3.5mm Stereo Jack-Green, PCB
	               3.5mm Stereo Jack-Pink, PCB (ST-C5USBV2A-R-300)

Maximum Input Level	2.82 Vp-p (unbalanced)
Input Impedance	10 kohms
Maximum Output Level	3.1 Vp-p
Frequency Response	20 Hz to 20 kHz, $\pm$ 1dB
THD+N	<0.1%
S/N	>76dB
Stereo Crosstalk	-70dB @ 1 kHz

INTERCONNECTION CABLE WIRING METHOD

The connection cable between the remote and local is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568B industry standard.   Wiring is as per the table and drawing below.

Pin	Wire Color	Pair	Function
1	White/Orange	2	T
2	Orange	2	R
3	White/Green	3	T
4	Blue	1	R
5	White/Blue	1	T
6	Green	3	R
7	White/Brown	4	T
8	Brown	4	R
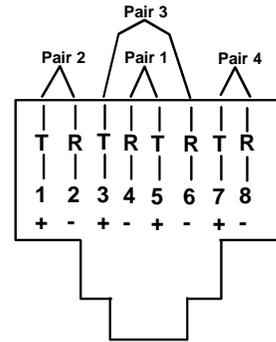
(View looking into RJ45 female)

Figure 19- Pin positions in female RJ45 connector

Note: CAT5 connection cable used between NTI XTENDEX Series Local and Remote or any XTENDEX Series products should not be run underground, outdoors or between buildings.

⚠ **!** *WARNING: Outdoor or underground runs of CAT5 cable could be dangerous and will void the warranty.*

KEYBOARD TRANSLATION

Key Equivalents

Using the chart below, find the character needed to be typed on the CPU being accessed, then follow the row across for the equivalent on the keyboard being used.   (See Figure 20 on page 23 for reference.)

USB 101	WINxx	MAC (Apple USB)	SUN
L-Ctrl	L-Ctrl	L-Ctrl	L-Ctrl
L-Alt	L-Alt	L-Option	L-Alt
SB+F12	Application	SB+F12	Compose
R-Alt	R-Alt	R-Option	Alt-Graph
SB+Alt	Windows Logo	Command	Meta
SB+R Arrow	SB+R Arrow	Power	Suspend

SB = Space Bar

L and R = Left and Right keys when two keys are marked the same on a keyboard.

SUN's 16 Extra Keys

Use the chart below to type SUN's additional 16 keys using a 101, WINxx, or MAC (Apple) USB keyboard).

101,WINxx,MAC Keyboards	SUN Extras	101,WINxx,MAC Keyboards	SUN Extras
SB+F1	Stop (L1)	SB+F9	Find (L9)
SB+F2	Again (L2)	SB+F10	Cut (L10)
SB+F3	Props (L3)	SB+F11	Help
SB+F4	Undo (L4)	SB+F12	Compose
SB+F5	Front (L5)	SB + Up Arrow	Vol +
SB+F6	Copy (L6)	SB + Down Arrow	Vol -
SB+F7	Open (L7)	SB + L Arrow	Mute
SB+F8	Paste (L8)	SB + R Arrow	Suspend

SB = Spacebar
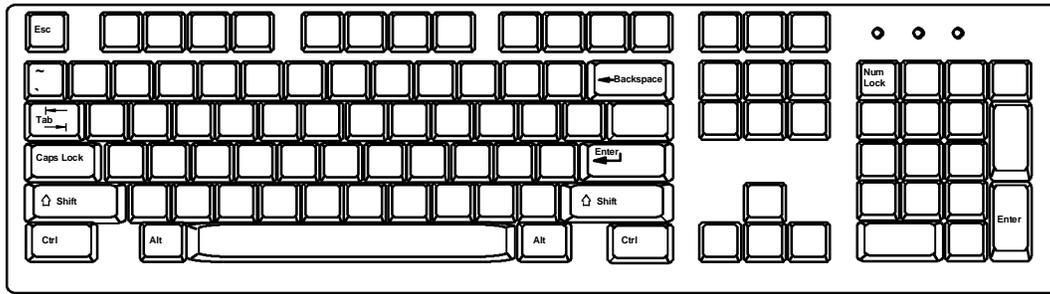
Typical 101 Keyboard

Windows Logo Key   **Windows Logo Key**   **Application Key**

Windows USB Keyboard

CD Eject Key

Command Key   **Command Key**

Apple Pro USB Keyboard

Power key

Meta Key   **Meta Key**
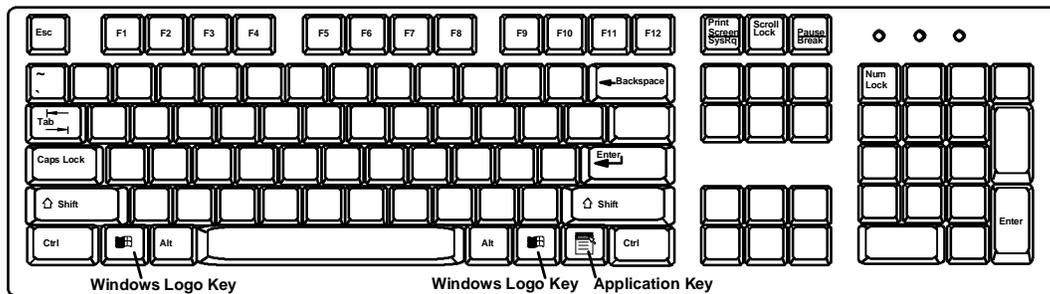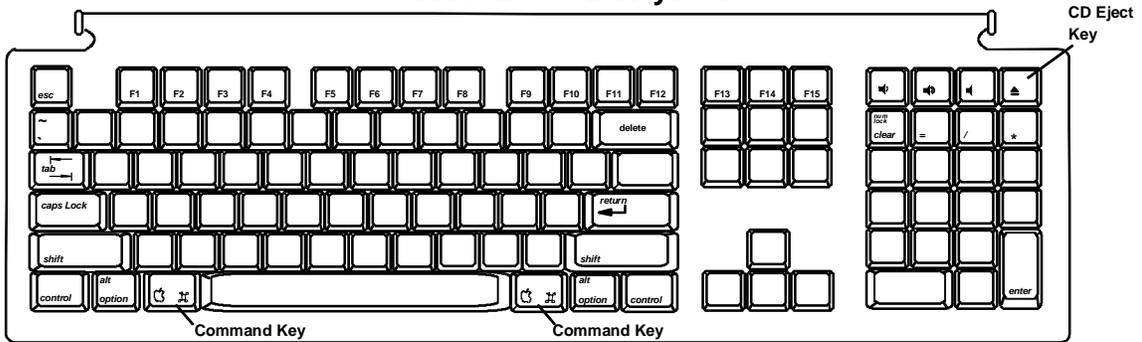
SUN USB Keyboard

Figure 20- Keyboard Layouts

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TROUBLESHOOTING

Each and every piece of every product produced by Network Technologies Inc is 100% tested to exacting specifications.   We make every effort to insure trouble-free installation and operation of our products.   If problems are experienced while installing this product, please look over the troubleshooting chart below to see if perhaps we can answer any questions that arise.   If the answer is not found in the chart, a solution may be found in the knowledgebase on our website at http://information.networktechinc.com/jive/kbindex.jspa or please call us directly at (**800) 742-8324 (800-RGB-TECH)** or **(330) 562-7070** and we will be happy to assist in any way we can.

Problem	Cause	Solution
Remote Unit power LED does not illuminate	• Power supply is not connected or plugged-in.	• Make sure outlet is live and transformer is plugged-in. • Make sure 9VDC jack is fully connected to the Remote Unit.
Local Unit power LED does not illuminate	• Power supply is not connected or plugged-in.	• Make sure outlet is live and transformer is plugged-in. • Make sure 9VDC jack is fully connected to the Local Unit.
No video on monitor	• One or more video cables is loose or disconnected. • No Power to Remote or Local Units. • Video Cable was not attached when CPU was booted. • CAT5 cable is not connected.	• Check all video cable connections • Make sure power LED is illuminated for local and remote. If not, see both solutions above. • With all the cables properly connected, reboot the CPU. • Check cable connections. Make sure they are snapped-in properly and completely. • Check cable connections. Make sure they are snapped-in properly and completely.
Video picture is not sharp or is smeared	• CAT5 cable is too long. • Video quality is not set properly.	• Verify length is within specified limits-300'. • See page. 16 for instruction on "Video Quality Adjustment".
Monitor sometimes loses sync, causing it to go blank for a second or two	• Electrical power system is very noisy, particularly the ground. • The CAT5 cable is not properly connected.	• Make sure the interconnection cable is not near any power lines. • Check cable connections. Make sure they are snapped-in properly and completely.
The picture on the monitor is black and white, rather than color	The video cable was not attached to the CPU when it was booted.	With the cables all properly connected, reboot the CPU.
A constant vertical wobble appears down the screen	CAT5 cable is too close to a strong power source.	Reroute CAT5 cable if possible.
PC boots with no error messages, but the keyboard does not work	• Keyboard cable is loose. • Keyboard in use is not compatible.	• Reseat Keyboard cable and check again. • Make sure Keyboard is directly connected, not through a PS/2 to USB adapter.
Wrong or missing characters from those typed	The keyboard may be in the wrong mode.	• Disconnect keyboard at Remote Unit end and reconnect. • Reboot the system.
Connecting the keyboard effects the video	Older keyboards may require higher current than our unit supplies.	Change to a newer keyboard.
Mouse cursor appears on the screen, but the mouse does not work	• Mouse cable is loose or disconnected. • Mouse is not compatible. • Remote connections didn't initialize.	• Check for quality cable connections to mouse at Remote Unit end. • Make sure mouse is USB type. • Power down the Remote Unit and then power up again.
Cannot enter Command Mode	User is trying to access Command Mode from the devices connected to the Local Unit	Command Mode is not accessible at the Local Unit. Try again from devices connected to the Remote Unit. (See page 16.)
Mouse is not working as configured when connected to a MAC	ST-C5USBV-300 is not operating in MAC mode	Check to see if MAC mode LED is illuminated. If not, enable MAC mode (see page 17)

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WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network

Technologies Inc at (800) 742-8324 (800-RGB-TECH) or (330) 562-7070 or visit our website at **http://www.networktechinc.com**

for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

Note: CAT5 connection cable used between NTI XTENDEX Series Local and Remote or any XTENDEX Series products should not be run underground, outdoors or between buildings.

⚠ *WARNING: Outdoor or underground runs of CAT5 cable could be dangerous and will void the warranty.*

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