XTENDEX® Series

EXTENDERS
Installation and Operation Manual

**ST-C5KVM2ARS-1000S
Keyboard, Mouse, Video,
Audio and RS232
Extender**

**ST-C5V2ARS-1000S
Video, Audio and RS232
Extender**

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 XTENDEX Series CAT5 Extender (XTENDEX) is designed to enable one CPU to be controlled by two users, one local and one remote.   Extended components may include a standard monitor (or touchscreen monitor when RS232 is supported), PS/2 keyboard, PS/2 mouse, microphone, and speakers,   The remote user can be located as much as 1000 feet away from a PS/2 CPU via Category 5/5e/6 unshielded twisted-pair cable. The local user will be located near the CPU.

The XTENDEX Series Extender is extremely simple to install and has been thoroughly tested to insure reliable performance. Through the use of Category 5 cable it is possible to economically increase the flexibility of a computer system. Here are some of the features and ways this can benefit any workplace:

- Allows the placement of computer peripherals (monitor, keyboard, and mouse) in a location where only these parts are needed without having the CPU there too, taking up valuable space

- Allows a PS/2 CPU to be accessed by both a local and remote user (up to 1000 feet away)

- Compatible with XGA, VGA, and SVGA systems

- Provides crisp and clear resolution up to 1920 x 1200 @ 1000 feet (see page 15 for more details)

- Compatible with all NTI switches and splitters, enabling the joining of products to create a system that satisfies all networking needs

- Video quality adjustment, for varying lengths of cable, is automatic (see page 12) providing optimum image quality

- Audio frequency response is 20Hz to 20Khz, $\pm$ 1dB (models with audio support only)

- Digital transmission of audio signals reduces any loss in quality (models with audio support only)

- Built-in surge protection

This manual covers each of the XTENDEX Series CAT5-1000S Extender models offered. Some features described in this manual are available in some models and not in others. The chart below shows the features supported in each:

Model	IR	Keyboard Mouse Support	2-Way Audio Support	RS232 Support
ST-C5KVM-1000S	No	Yes	No	No
ST-C5KVM2A-1000S	No	Yes	Yes	No
ST-C5KVMRS-1000S	No	Yes	No	Yes
ST-C5KVM2ARS-1000S	No	Yes	Yes	Yes
ST-C5V-1000S	Yes	No	No	No
ST-C5V2A-1000S	Yes	No	Yes	No
ST-C5VRS-1000S	Yes	No	No	Yes
ST-C5V2ARS-1000S	Yes	No	Yes	Yes

Note: The IR controls (transmitter and receiver) are not available as of this printing.

MATERIALS

Materials Included with this kit:

- ✓ NTI XTENDEX Local Unit
- ✓ NTI XTENDEX Remote Unit
- ✓ 2- 120VAC at 60Hz-9VDC/1.0A AC Adapters
            --or--
     230VAC at 50Hz-9VDC/1.5A AC Adapters
- ✓ CD with a pdf file of this owner's manual and test patterns for color skew adjustment
- ✓ 2- DB9M-RJ45F Serial Adapter RJ45 Female-DB9 Male (models with RS232 support only)
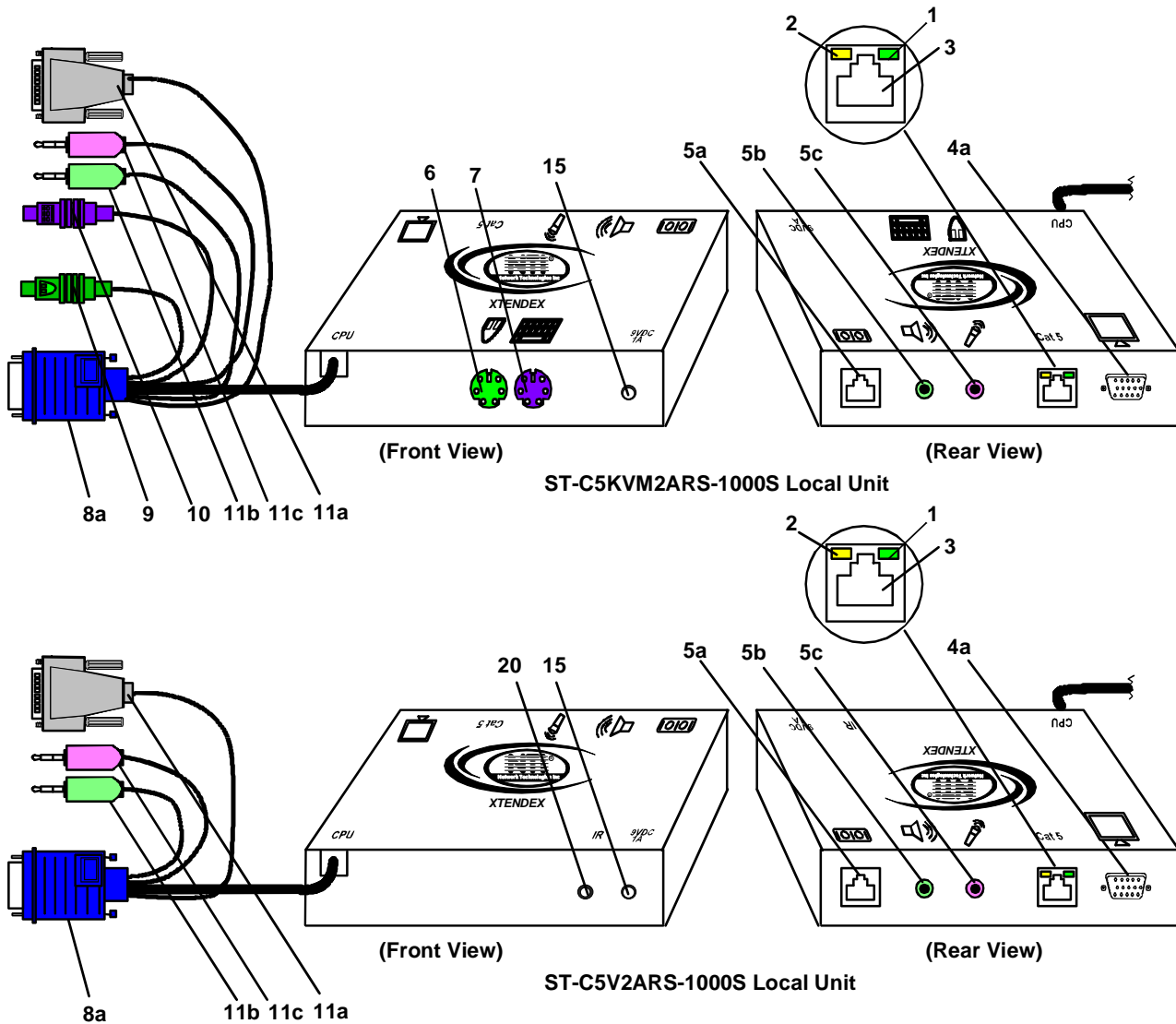- ✓ 2- 5 foot RJ45-to-RJ45 CAT5 Patch Cables (models with RS232 support only)

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

➢ CAT5/5e/6 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 16 for proper EIA/TIA 568 B wiring method)

➢ Cable(s) needed if Local Unit will be located further than 15" from the CPU

| Model	Cable(s) needed
ST-C5KVM-1000S	VKMEXT-xx
ST-C5KVMRS-1000S	VKMEXT-xx and DINT-xx
ST-C5KVM2A-1000S	VKMEXT-xx and SA-xx-MF
ST-C5KVM2ARS-1000S	VKMEXT-xx , SA-xx-MF, and DINT-xx
ST-C5V-1000S	VEXT-xx
ST-C5VRS-1000S	VEXT-xx and DINT-xx
ST-C5V2A-1000S	VEXT-xx and SA-xx-MF
ST-C5V2ARS-1000S	VEXT-xx, SA-xx-MF, and DINT-xx

Contact your nearest NTI distributor or NTI directly for all of your KVM needs at 800-RGB-TECH (800-742-8324) 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.

(Front View)   **(Rear View)**

ST-C5KVM2ARS-1000S Local Unit

**(Front View)**   **(Rear View)**

ST-C5V2ARS-1000S Local Unit

FEATURES AND FUNCTIONS

1. Green LED- power indicator- illuminates when power has been supplied to the unit

2. Yellow LED-traffic indicator- illuminates when there is communication between the local and remote units.

3. Cat 5- RJ45 female- for connecting the CAT 5 cable

4a. Video Connector- 15HD female- for connecting the local user's VGA monitor

5a. RS232 Connector- RJ45 female- for connecting the local user's touchscreen monitor (models with RS232 support only)

5b. Audio Jack- lime 3.5mm stereo audio jack- for connecting to local speakers (models with audio support only)

5c. Audio Jack- pink 3.5mm stereo audio jack- for connecting to local microphone (models with audio support only)

6. Mouse Connector- green female 6 miniDIN- for connecting the local user's mouse

7. Keyboard Connector- purple female 6 miniDIN- for connecting the local user's keyboard

8a. Video Connector- blue 15HD male- for connecting to the video port on the CPU or KVM switch

9. Mouse Connector- green male 6 miniDIN- for connecting to the mouse port on the CPU or KVM switch

10. Keyboard Connector- purple male 6 miniDIN- for connecting to the keyboard port on the CPU or KVM switch

11a. RS232 Connector- light gray 9D female- for connecting to the RS232 port on the CPU or KVM switch (models with RS232 support only)

11b. Audio Plug- lime 3.5mm stereo audio plug- for connecting to CPU audio line out (models with audio support only)

11c. Audio Plug- pink 3.5mm stereo audio plug- for connecting to CPU microphone jack (models with audio support only)

12. Keyboard Connector- purple female 6 miniDIN- for connecting the remote user's keyboard

13. Mouse Connector- green female 6 miniDIN- for connecting the remote user's mouse

14a. RS232 Connector- 9D male- for connecting the remote user's touchscreen monitor (models with RS232 support only)

14b. Audio Jack- lime 3.5mm stereo audio jack- for connecting to remote speakers (models with audio support only)

14b. Audio Jack- pink 3.5mm stereo audio jack- for connecting a microphone (models with audio support only)

15. 9VDC- 1.0A- connection jack for the AC adapter

16a. Video Connector- 15HD female- for connecting the remote user's monitor

17. + / - Buttons- for fine video quality adjustment (in models without keyboard/mouse support)

18. Mode Button- for switching between skew adjustment and video quality adjustment modes (only in models without keyboard/mouse support)

19. Mode LED- for visual indication of skew or video quality adjustment modes (only in models without keyboard/mouse support)

20. IR Jack- For connection of an Infrared Sensor for remote control (only in models without keyboard/mouse support) **(feature not supported as of this printing)**
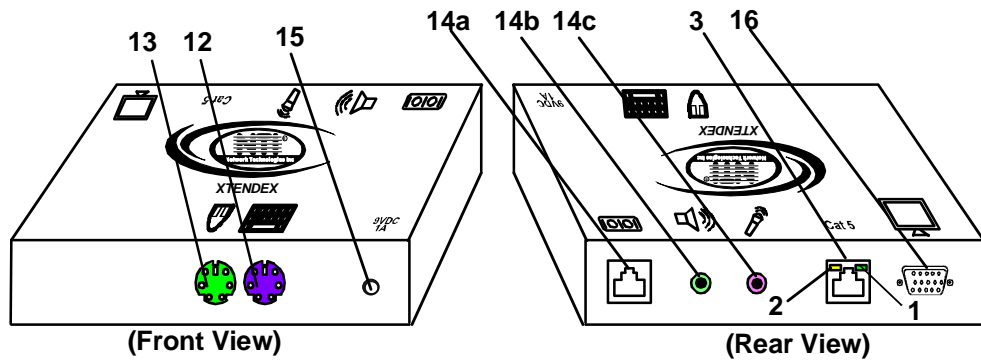
ST-C5KVM2ARS-1000S Remote Unit
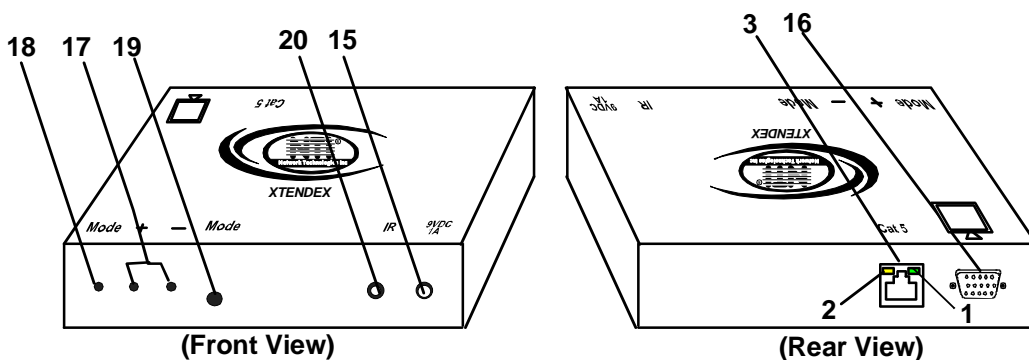
ST-C5V-1000S Remote Unit

LIMITATIONS

• Hot-plugging of devices is supported provided devices were originally connected at power-up.

• In order for two users to share a PS/2 CPU, the user in control must pause for at least 3 seconds before another user can take control.   After the 3 second pause, either user can take control of the CPU.

For models with RS232 support:
• The RS232 ports on the Local and Remote Units will support serial devices other than touchscreen monitors as follows:

  • 2 simple devices (i.e. mice) connected to <u>each</u> unit,   or

  • 1 complex device (i.e. serial modem, RS232 command port on an NTI switch) connected to <u>either</u> the Remote or Local Unit.

• The RS232 port supports all baud rates up to 57.6K bits per second and the attached CPU must be configured accordingly.

For models with 2-way audio support:
• The audio jacks of the XTENDEX with audio support are compatible with the following standard CPU audio connectors:

  • Line out - typically lime green in color
  • Speaker out- typically orange in color
  • Headphone out- typically located on the CD-ROM
  • Microphone in- typically pink in color

• The audio output of the XTENDEX with 2-way audio support is compatible with self-powered stereo speakers.
.
• When two microphones are connected (one at local and one at remote), only one can be active at a time
The user will select the active microphone via either push-button or keyboard command.

PREPARATION FOR INSTALLATION

• Locations should be chosen for the monitors, mice, and keyboards that also have space to connect the Remote and Local Units within the distance provided by the cables.   If extension cables are needed, contact NTI for the cables required.

• The CAT5 cables must be run to the locations where the Remote and Local Units will be connected.   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.).

• All cables should be installed in such a way that they do not cause 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 minimize this.

• Properly shut down and disconnect the power from the CPU and monitors to be separated.   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.
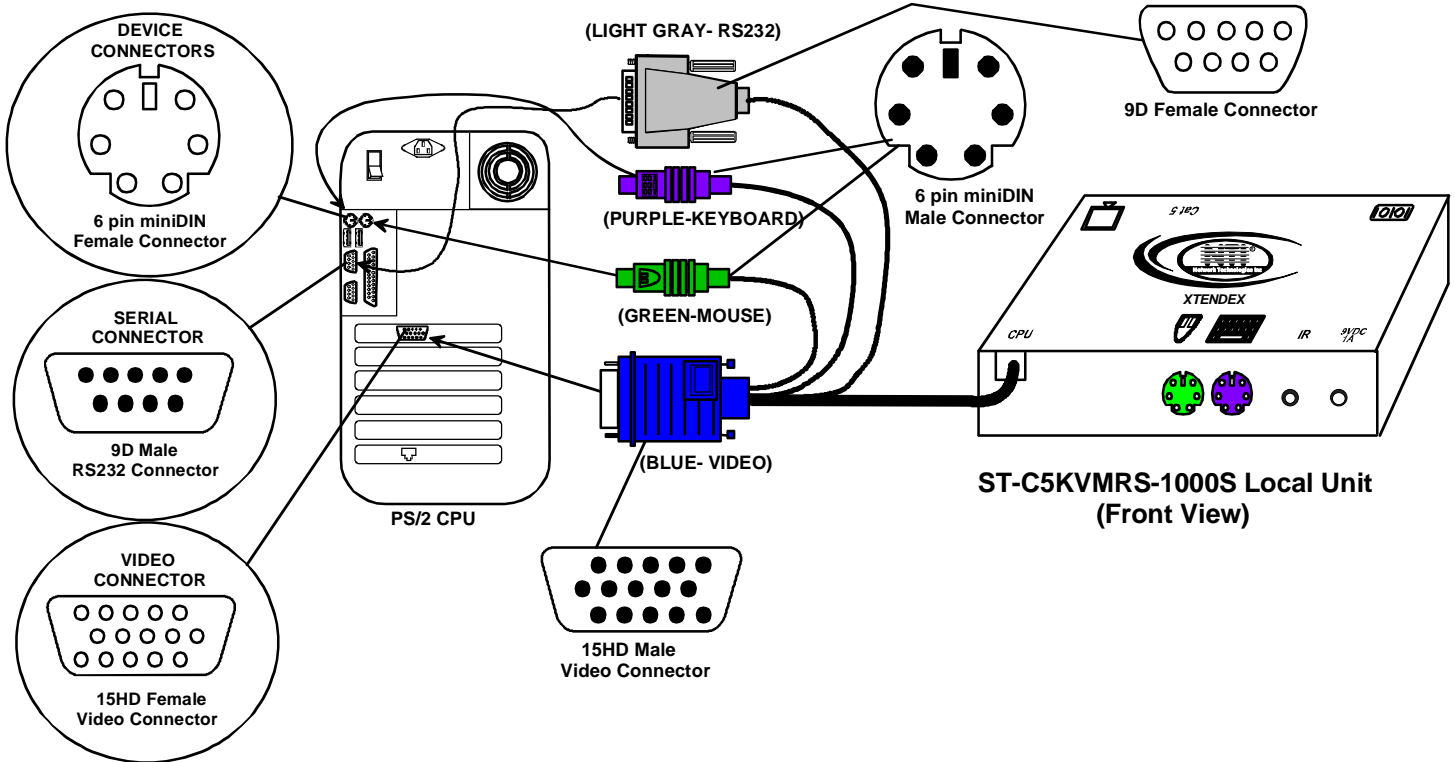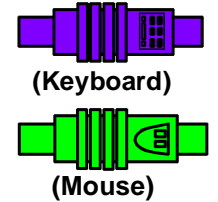
WARNING: Outdoor or underground runs of CAT5 cable could be dangerous and will void the warranty.

INSTALLATION

Installing The Local Unit

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

    a) Connect the blue 15HD cable end to the VGA port on the back of the CPU.

    b) Connect the purple 6 pin miniDIN cable end with the keyboard symbol
        on it to the keyboard port on the back of the CPU.   (KVM models only)

    c) Connect the green 6 pin miniDIN cable end with the mouse symbol
        on it to the mouse port on the back of the CPU. (KVM models only)

(Keyboard)

(Mouse)

DEVICE
CONNECTORS

6 pin miniDIN
Female Connector

(LIGHT GRAY- RS232)

9D Female Connector

(PURPLE-KEYBOARD)

6 pin miniDIN
Male Connector

SERIAL
CONNECTOR

9D Male
RS232 Connector

(GREEN-MOUSE)

XTENDEX

CPU   IR   9VDC
                         1A

**ST-C5KVMRS-1000S Local Unit
(Front View)**

PS/2 CPU

(BLUE- VIDEO)

VIDEO
CONNECTOR

15HD Female
Video Connector

15HD Male
Video Connector

Figure 1- Connect the Local Unit with VGA video and RS232 support to the CPU

    d) If the Local Unit has RS232 support, connect the light gray 9D cable end to the RS232 port on
        the back of the CPU.

    e) If the Local Unit has Audio support, connect the lime green 3.5mm stereo plug into the "line out",
        "speaker", or "headphones" jack on the back of the CPU. (See Fig. 2).   Connect the pink 3.5mm stereo plug
        to the "line in" or "microphone" jack on the back of the CPU.
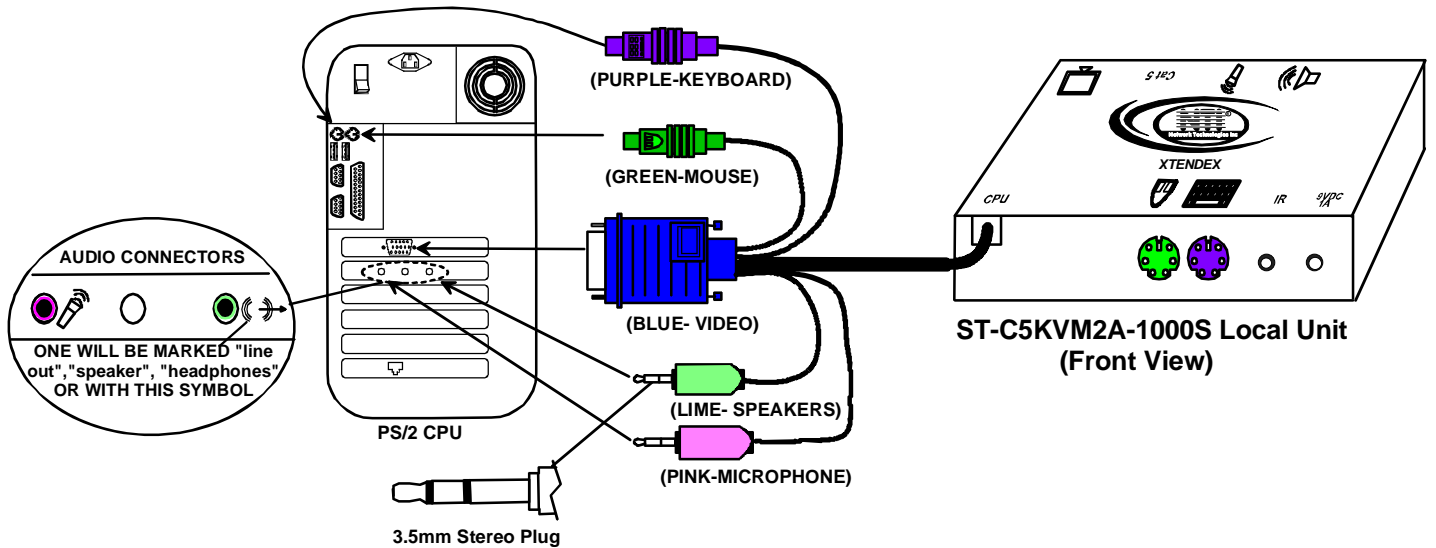
Notes:
If all 3 jacks are available, use the jack marked "line out".

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

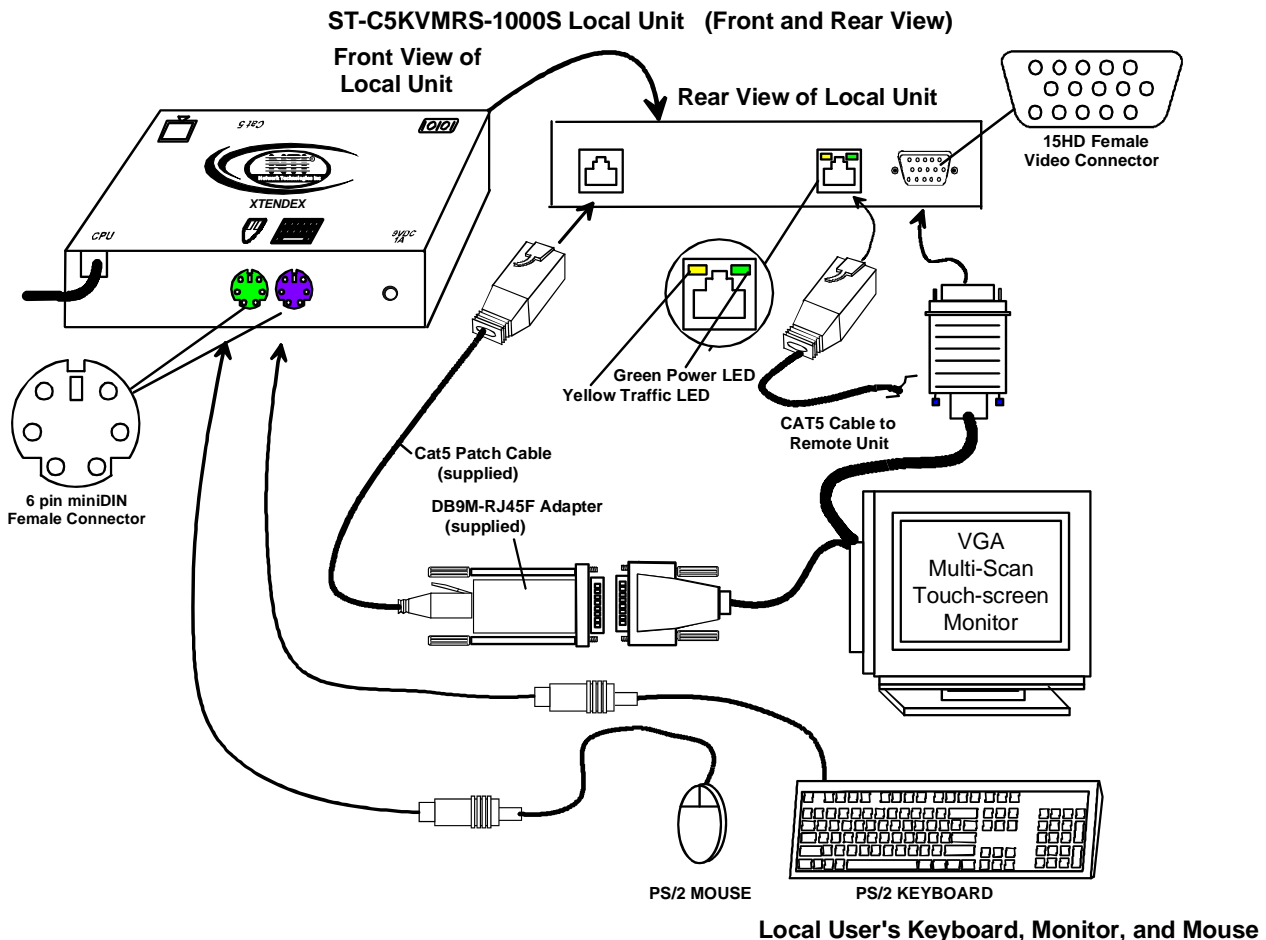*The "speaker" jack is typically orange, and may be marked with this symbol*

The "headphones" jack may be marked with this symbol

The "microphone" jack is typically pink and may be marked with this symbol

(PURPLE-KEYBOARD)

(GREEN-MOUSE)

(BLUE- VIDEO)

AUDIO CONNECTORS

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

PS/2 CPU

(LIME- SPEAKERS)

(PINK-MICROPHONE)

3.5mm Stereo Plug

ST-C5KVM2A-1000S Local Unit (Front View)

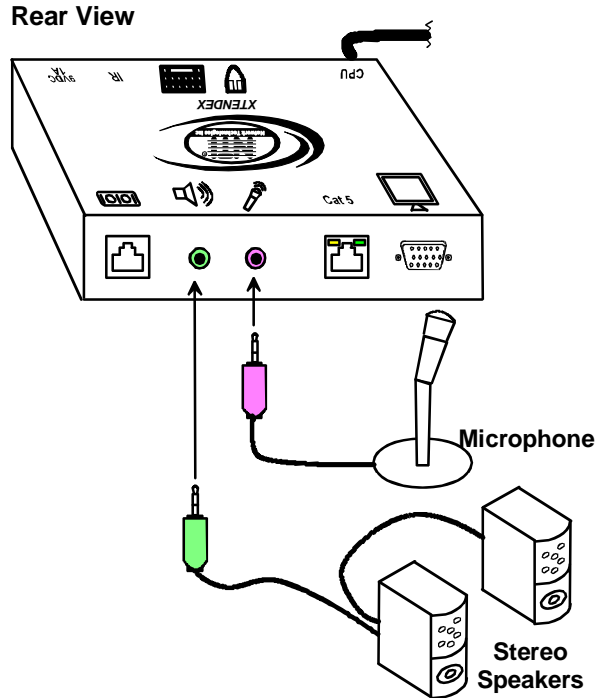**Figure 2- Connect the Local Unit with audio support to the CPU**

2. Make connections for a local user (see Fig. 3)

    a) Connect the cable from the local user's VGA monitor to the female 15HD port on the Local Unit.

    b) Connect the local user's keyboard to the purple 6 pin miniDIN female port on the Local Unit.

    c) Connect the local user's mouse to the green 6 pin miniDIN female port on the Local Unit.

ST-C5KVMRS-1000S Local Unit   (Front and Rear View)

Front View of Local Unit

Rear View of Local Unit

15HD Female Video Connector

Green Power LED
Yellow Traffic LED

CAT5 Cable to Remote Unit

Cat5 Patch Cable (supplied)

DB9M-RJ45F Adapter (supplied)

6 pin miniDIN Female Connector

VGA Multi-Scan Touch-screen Monitor

PS/2 MOUSE

PS/2 KEYBOARD

Local User's Keyboard, Monitor, and Mouse

Figure 3- Connect the local user to the XTENDEX Local Unit

d) If the Local Unit has RS232 support, connect the local user's RS232 cable from a touch screen monitor to the RJ45 port on the Local Unit using the DB9M-to-RJ45 adapter and patch cable provided.

e) If the Local Unit has audio support, connect the cable from the local speakers to the 3.5mm stereo audio jack with the speaker symbol on the Local Unit. (See Fig. 4)   Connect a microphone to the 3.5mm stereo audio jack with the microphone symbol on the Local Unit.

ST-C5KVM2ARS-1000S Local Unit
Rear View

Figure 4- Connect stereo speakers and microphone to XTENDEX Local Unit with audio support

Note: When two microphones are connected (one at local and one at remote), only one can be active at a time.   See mode charts on pages 12 and 13 for active microphone selection.
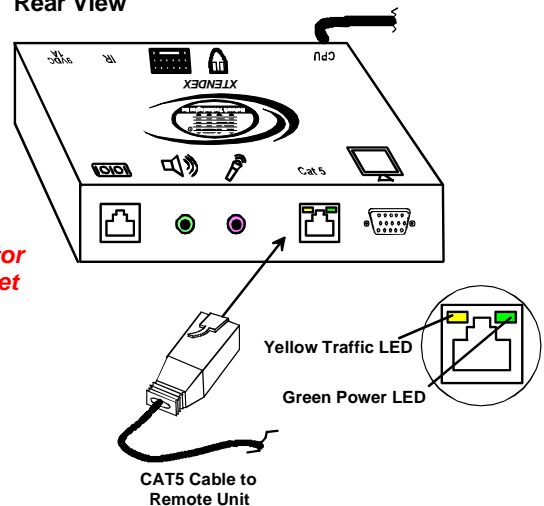
Connect The CAT5 Cable

Connect the CAT5 cable to the "Cat 5" port on the Local Unit. (See Fig. 5.) When properly inserted the cable end should snap into place.

ST-C5KVM2ARS-1000S Local Unit
Rear View

Note: If an RJ45 wall outlet is being used, connect the other end of the extension cable to the RJ45 wall outlet.

WARNING: Never connect the XTENDEX 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.


Yellow Traffic LED

Green Power LED

CAT5 Cable to
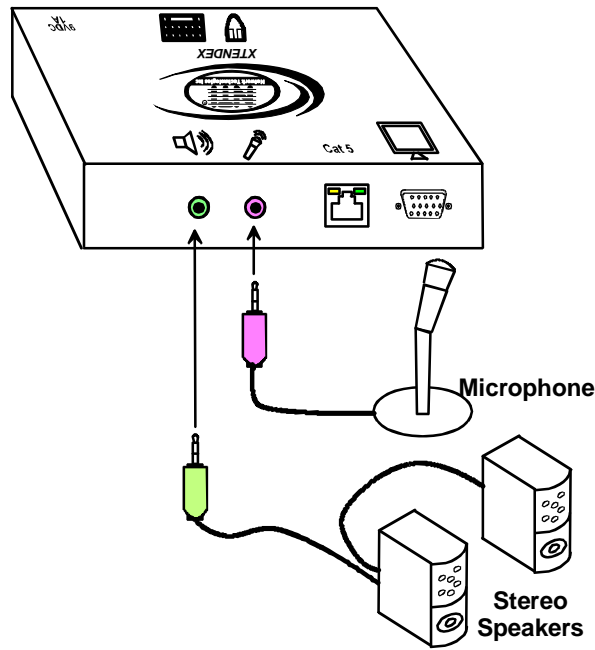Remote Unit

Figure 5- Connect CAT5 cable to Local Unit

Installing The Remote Unit

1. Position the Remote Unit such that the CAT5 cable, the monitor cable, device cables, and the AC adapter power connector can each reach the Remote Unit without putting strain on the cables.

2. Connect the monitor cable to the female 15HD video connector on the Remote Unit.

3. Connect the device(s) to the Remote Unit (see Fig. 6)(KVM models only).

   a. Connect the keyboard to the purple female 6 pin miniDIN connector on the Remote Unit.

   b. Connect the mouse to the green female 6 pin miniDIN connector on the Remote Unit.

4. If the Remote Unit has RS232 support, connect the remote user's RS232 cable from a touch screen monitor to the RJ45 port on the Remote Unit using the DB9M-to-RJ45 adapter and patch cable provided.

5. If the Remote Unit has audio support, connect the cable from the remote speakers to the 3.5mm stereo audio jack with the speaker symbol on the Remote Unit. (See Fig. 7) Connect a microphone to the 3.5mm stereo audio jack with the microphone symbol on the Remote Unit.
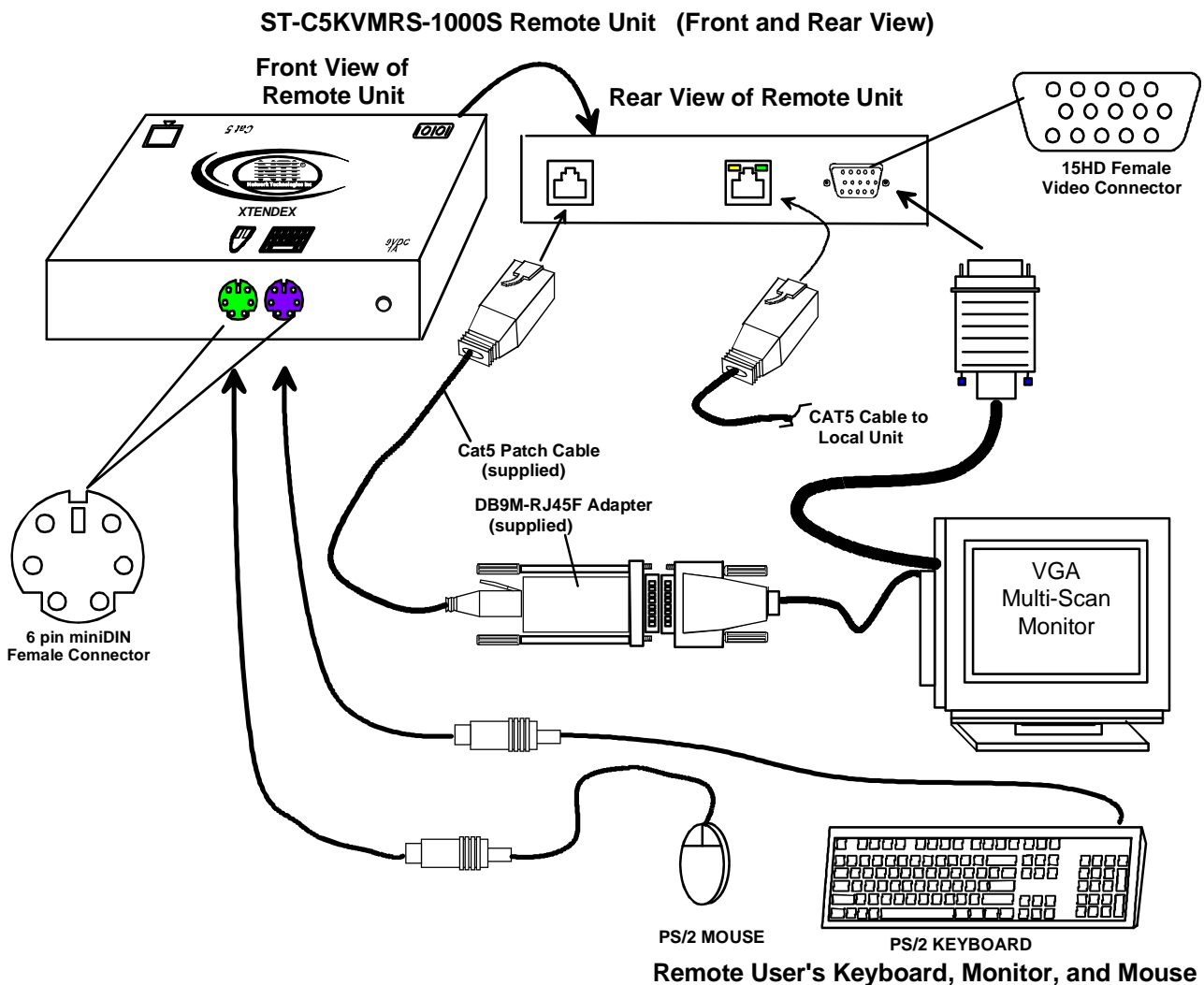
Figure 6- Connect the extended components to the Remote Unit

**ST-C5KVM2A-1000S Remote Unit
Rear View**

Figure 7- Connect speakers and microphone to the Remote Unit

Note: When two microphones are connected (one at local and one at remote), only one can be active at a time. See mode charts on pages 12 and 13 for active microphone selection.
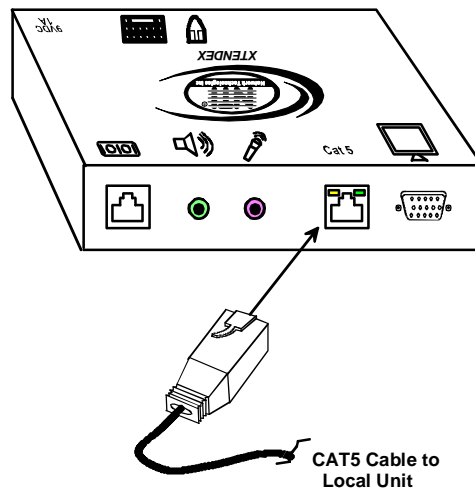
Connect the CAT5 cable

Make sure the CAT5 cable has been installed in accordance with the "Preparation for Installation" instruction on page 3. Connect the CAT5 cable to the "Cat 5" port on the Remote Unit. (See Fig. 8.) When properly inserted the CAT5 cable end should snap into place.

Note: If an RJ45 wall outlet is being used, connect the other end of the extension cable to the RJ45 wall outlet.

⚠ *WARNING: Never connect the XTENDEX 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.*

**ST-C5KVM2ARS-1000S Remote Unit
Rear View**

Figure 8- Connect the CAT5 cable to the Remote Unit

Plug-in and Boot Up

1. Plug the power cord from the monitor into the power outlet.

2. Connect each AC adapter power connector to the 9VDC ports on the Remote and Local Units   Plug each AC adapter into a power outlet.   The green LED on the RJ45 connector of both the Remote and Local Units should illuminate, indicating that a proper power connection has been made to them.   (See Fig. 9.)
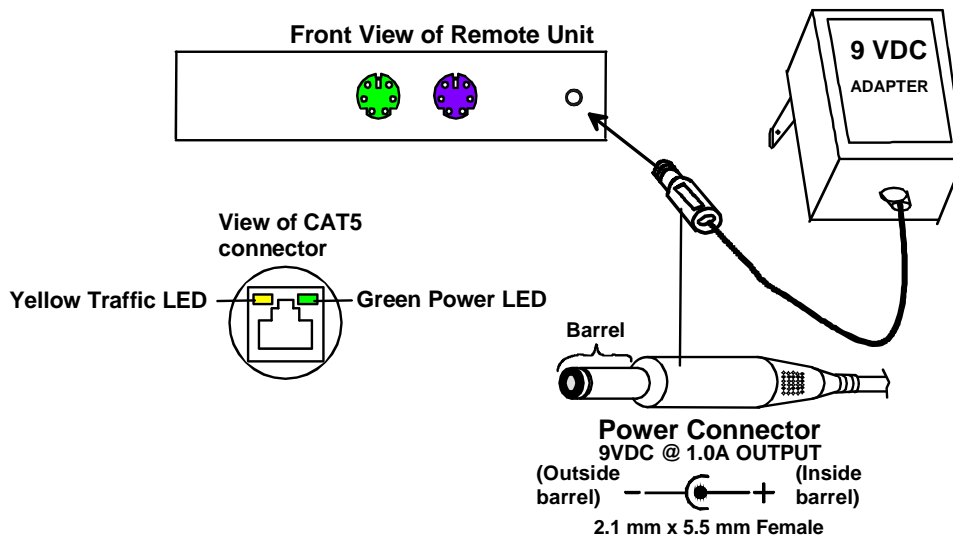
Figure 9- Connect the AC adapter to the Remote Unit

3. Turn ON the CPU and Monitor.   They should each react as if they were directly connected to each other.

Note: The yellow LED on each RJ45 connector will illuminate anytime data traffic is passing between the Local and Remote Units, indicating proper CAT5 cable connection and communication. (See Fig. 9)

VIDEO ADJUSTMENTS

Automatic Video Quality Adjustment

Video quality is broken down into "general video quality" for brightness and sharpness of the images, and "color skew" for how the colors align with each other on the monitor.   All general video quality adjustment is done automatically while color skew is adjusted manually as described in the following sections.   Test patterns for color skew adjustment are provided on the CD (see below). The automatic general video quality adjustment is calibrated for unshielded twisted pair cable. For shielded cable fine adjustment may be necessary and this can be done from +/- push buttons on all models without a keyboard or from keyboard keys using Command Mode on models that support a keyboard.   Video Quality Adjustment settings are automatically stored in the XTENDEX.   Settings will be restored each time the XTENDEX is powered-ON.

Note: If the cable is changed after making fine video quality adjustments or color skew adjustments (below), the XTENDEX will restore these settings to factory default and fine adjustments with the new cable may be necessary.

### Fine Video Quality Adjustment for Video-Only Models

 It is possible that on initial startup the image on the monitor will not be as crisp as the image normally is or the colors may not appear as they normally would. The colors may also be skewed, or out of alignment as they appear on the monitor.   This is due to the frequency characteristics of the CAT5 cable and differences in cable types that can be used (i.e. shielded vs. unshielded cable and CAT5 vs. CAT6 cable).   Models without keyboard support include a "Mode" button for the following functions:

- ➢ fine adjustment of the general video quality
- ➢ color skew adjustment (alignment of red, green, and blue signals on the monitor)
- ➢ update DDC information between the monitor and CPU
- ➢ select the active microphone (between local and remote units)

Test Patterns for Color Skew Adjustment

 To verify the need for and effect of color skew adjustment using a test pattern specifically designed for your display setting, browse the CD this manual was found on and click on the "test-pattern-nXm.pdf" file that matches your current video resolution.   Follow the instructions below to make adjustments as needed.

Depending upon what mode the XTENDEX is in, the "+" (plus) and "-" (minus) buttons can be pressed to make the adjustment. A "Mode" LED is provided to indicate what characteristic is being changed.
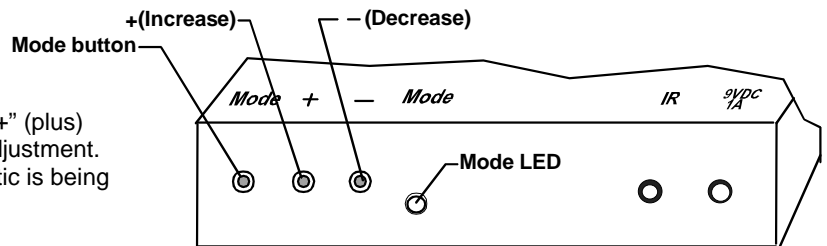
Front View of ST-C5V-1000S

Figure 10- Video Adjustment buttons

Note: The Local and Remote units must be connected and communicating in order for the mode button to function.

The chart below describes the video quality changes that can be made with the Mode button and the associated indication provided by the Mode LED.

Mode Button

Action	LED Indication	Press + or – to effect:
At power ON	Dark (LED OFF)	General Video Quality
First Press	Red	Red Skew
Second Press	Green	Green Skew
Third Press	Orange	Blue Skew
Fourth Press	Green Flashing	DDC update (press + or – to update)
Fifth Press	Red Flashing- rapid or slow	Active microphone Flash rapid= remote Flash slow= local (press + or – to toggle which is active)
Sixth Press	Dark (LED OFF)- repeat cycle	

Note: After pressing the Mode button, if there is a pause in button activity for 30 seconds or more, the feature will return to a power-ON state with the LED OFF.

A momentary press of either the "**+**" (plus) or "**-**" (minus) buttons button will make a minor change in the image.   If either button is pressed and held, the changes made will be gradual and continuous.   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.

If the image still lacks definition, configuration adjustments may need to be made to the attached video display equipment.   This is a problem most often seen in LCD displays. Check the manual for the equipment having the poor display and look for an "auto-adjust" or "auto-configure" feature.   Once this is done, you may need to repeat the Video Adjustment procedure described above to achieve the best image.

Fine Video Quality Adjustment for KVM Models

Models with keyboard support (ST-C5KVM-1000S, ST-C5KVM2A-1000S, ST-C5KVMRS-1000S, ST-C5KVM2ARS-1000S) are enabled with a Command Mode feature to perform the following:

> ➢ fine adjustment of the general video quality
> ➢ color skew adjustment (alignment of red, green, and blue signals on the monitor)
> ➢ update DDC information between the monitor and CPU
> ➢ select the active microphone (between local and remote units)

Most of the video quality adjustment is automatic at power ON,   but if some adjustment is necessary, this can be done using only the keyboard attached to the Remote Unit.

To enter Command Mode;
> 1. press **and hold** the left `<Shift>` key
> 2. press the right `<Shift>` key.
> 3. Release both keys.
   The three keyboard LEDs (NumLock, CapsLock, and ScrollLock) will blink to indicate entrance into Command Mode.

Once in Command Mode, to fine tune the general video quality, press the `<Left Arrow>` or `<Right Arrow>` keys until the desired improvement in the display has been achieved.

If a specific color appears to be skewed and is in need of fine adjustment, the user should select the color by pressing `<R>`, `<G>` or `<B>` respectively. The keyboard LEDs will identify the mode as indicated in the table below.   Press the `< Left Arrow>` or `<Right Arrow>` keys until the desired improvement in the color alignment has been achieved.

Tip: To verify the need for and effect of color skew adjustment using a test pattern specifically designed for your display setting, browse the CD this manual was found on and click on the "test-pattern-nXm.pdf" file that matches your current video resolution.

To update DDC information, press `<D>` and the Caps Lock and Scroll Lock LEDs will blink sequentially while the DDC data is transferred.

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

To toggle the active microphone between the Remote or Local unit,   press `<M>`. The table below indicates how to determine which microphone is active after pressing `<M>`.

Keyboard LED Indications

Mode	NUM LOCK	CAPS LOCK	SCROLL LOCK
General Video Quality	Blink	Blink	Blink
Red Skew	Blink	Solid	Solid
Green Skew	Solid	Blink	Solid
Blue Skew	Solid	Solid	Blink
Local Microphone active	Blink	Blink	Solid
Remote Microphone active	Solid	Blink	Blink
DDC	Sequentially blinking		

Press the`<A>` key (while in Command Mode) to reset the fine tuning to default settings.

Press the `<Esc>` key to exit Command Mode and return to normal operation.   All keyboard LEDs will return to current keyboard LED state.

FYI: Video quality will be limited by several factors.   Some factors include the quality and type of CAT5 cable being used, the length of cable run, the quality of the monitor, the resolution setting of the monitor, and the quality of the video card used in the video source.   If the desired level of image clarity cannot be achieved by making the adjustments described in this section, consider the following possible adjustments that can be made:

- **Improve the quality of cable used (CAT5,5e,or 6), CAT6 unshielded (UTP) cable will provide the best performance**
- **Use unshielded cable (UTP) instead of shielded cable (STP)**
- **Shorten the length of the cable between the remote and local**
- **Reduce the resolution setting on the monitor used**
- **Use a higher quality video card in the video source**

14

TECHNICAL SPECIFICATIONS

Models with VGA Video	
Video Compatibility	VGA,SVGA, XGA, SXGA,UXGA
Video Coupling	DC
Video Connectors	HD15 male to CPU HD15 female to monitor
Input / Output Impedance	75 Ohms
Input Horizontal Frequency Range	15kHz to 130kHz
Input Vertical Frequency Range	30 Hz to 150 Hz
Sync Types Supported	Separate and composite TTL Level
Video Maximum I/O Levels	1.45Vp-p
Models with Keyboard/Mouse support	
Keyboard/Mouse Connectors	Female 6 pin miniDIN to Keyboard and Mouse Male 6 pin miniDIN to CPU device ports
Mouse and Keyboard Compatibility	All PS/2 mice and keyboards
Keyboard and Mouse Current Rating	500mA maximum
Models with Stereo Audio Support	
Audio Connectors	3.5mm stereo jack (lime) to speakers 3.5mm stereo plug (lime) to CPU
Signal Type	Line Level, stereo, unbalanced
Audio Frequency Response	20Hz to 20Khz, $\pm$ 1dB
Signal-to-Noise Ratio	76 dBA
Stereo Crosstalk	-70 dB @ 1kHz
Audio Maximum I/O Levels	3.1Vp-p
Maximum Load	2k Ohms, unbalanced
Input Impedance	10k Ohms
Total Harmonic Distortion and Noise	0.017%,F=20-20KHz, RL=2K Ohm, Vout=1 Vrms
Models with Microphone Support	
Microphone Type	Electret
Audio Connector	3.5mm stereo jack (pink) to microphone 3.5mm stereo plug (pink) to CPU
Input Impedance	10k Ohms
Maximum Input Level	1 V, unbalanced
Maximum Output Level	1 V, unbalanced
Models with RS232 Support	
RS232 Connectors	RJ45 female to device 9D female to CPU
RS232 Baud Rate	57.6K bps maximum (no adjustment for baud rate is needed)
RS232 Compatibility	RXD, TXD, RTS, DTR, CTS, DSR, DCD
General	
Interconnect Cable	CAT5/5e/6 Solid UTP EIA/TIA 568 B wiring w/ male RJ45 connectors
Remote and Local Unit Power	120V at 60Hz-9VDC/1.0A via AC adapters (2) -or- 230V at 50Hz-9VDC/1.5A via AC adapters (2)
Size (In.) WxDxH	5.05x3.1x1.235
Regulatory Approvals	RoHS

Distances and Maximum Supported Resolutions for CAT5, CAT5e and CAT6 Cables

Unshielded Twisted Pair (UTP)   Resolutions

UTP CABLE	DISTANCE (feet)	RESOLUTION
CAT5/5e	1000	1920x1200 at 60Hz
CAT5/5e/6	800*	1920x1440 at 60Hz
CAT5/5e/6	600	2048x1536 at 60Hz

*The performance of CAT6 unshielded, is not guaranteed
  beyond 800 feet.

Shielded Twisted Pair (STP)   Resolutions

STP CABLE	DISTANCE (feet)	RESOLUTION
CAT5/5e/6	800**	1920x1200 at 60Hz
CAT5/5e/6	600	1920x1440 at 60Hz
CAT5/5e/6	400	2048x1536 at 60Hz

**The performance of shielded CAT5, CAT5e and CAT6
  shielded cable is not guaranteed beyond 800 feet.

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 568 B industry standard.   Wiring is 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
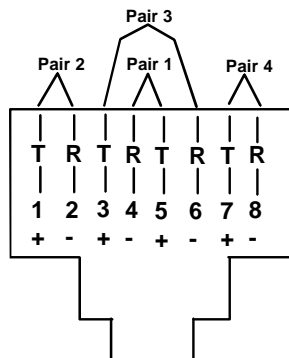
Figure 11- View looking into RJ45 female

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, please check the FAQs (Frequently Asked Questions) at our website at http://www.networktechinc.com or contact us directly for help at 800-742-8324 (800-RGB-TECH) in US & Canada or 330-562-7070 worldwide.   We will be happy to assist in any way we can.

Problem	Cause	Solution
Remote or Local Unit green power LED does not illuminate	• Power supply is not connected or plugged-in.	• Make sure outlet is live and AC adapter is plugged-in. (one for the Remote and one for the Local) • Make sure 9VDC jack is fully connected
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 green LEDs are illuminated for local and remote. If not, see solutions for problem above. • With all the cables properly connected, reboot the CPU. • Check cable connections. Make sure they are snapped-in properly and completely and reboot.
Video Picture is not sharp or is smeared	• All Video Cables are not firmly seated. • CAT5 cable is too long. • The CAT5 cable is not properly connected. • Video not adjusted	• Check all connections. Make sure all cables are fully seated. • Verify length is within specified limits-1000'. • Check cable connections. Make sure they are snapped-in properly and completely. • Check cable connections and power cycle. See page 12 for video quality adjustment instruction.

Problem	Cause	Solution
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.
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.
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.
CPU doesn't detect the keyboard and the mouse	• Keyboard cable or mouse cable are loose or reversed • Cat 5 cable is too long	• Check cable connections • Cat 5 cable can be no more than 1000 feet in length
IBM Scroll Point mouse is not recognized by CPU	Only one IBM Scroll Point mouse is connected at either the Local or Remote unit	• In order for an IBM Scroll Point mouse to be recognized, an IBM Scroll Point mouse must be connected at <u>both</u> the Local and Remote extender units. Otherwise it will be recognized and work only as a Microsoft Intellimouse.
Image is not displayed properly, lacks definition	Signal is being skewed by the CAT5 cable and not being received correctly by the monitor .	• Check the user's manual for the monitor, projector, or display equipment for an "automatic adjustment" or "auto-configure". This is most common to LCD type monitors.
Models with RS232 Support		
No RS232 communication	• One or more RS232 cables is loose or disconnected	• Check all RS232 cable connections
Models with audio Support		
No audio	• Audio cable is not properly plugged in • Speakers are not plugged in • CAT5 cable is not properly connected	• Check all cable connections • Verify speakers are connected and powered • Check CAT5 cable connections
Microphone not working at either Local or Remote	• Active microphone not set properly	• Set microphone to be active where it is connected, at either the Local or Remote unit (not both). See pages 12 (models without keyboard support) or 13 (models with keyboard support) for instruction on setting the active microphone.

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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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