



**NTI** NETWORK  
TECHNOLOGIES  
INCORPORATED

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

**VOPEX® Series**

# VOPEX-C5VA-xC1000

## Video/Audio Splitter/Extender

### Installation and Operation Manual



(Receiver not included)

## TRADEMARK

VOPEX is a registered trademark of Network Technologies Inc in the U.S. and other countries.

## COPYRIGHT

Copyright © 2003, 2012 by Network Technologies Inc. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written consent of Network Technologies Inc, 1275 Danner Drive, Aurora, Ohio 44202.

## 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.



**WARNING:** *Never connect a VOPEX Series VOPEX-C5VA-xC1000 Extender/Splitter 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.*

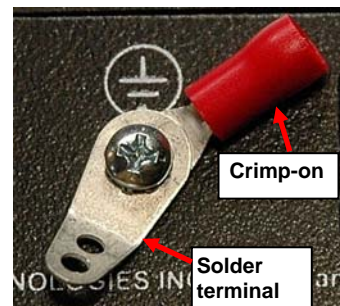
**Note:** *CAT5 connection cable used between NTI VOPEX Splitter and XTENDEX Series Remote should not be run underground, outdoors or between buildings.*



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

## GROUNDING

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



## **TABLE OF CONTENTS**

Introduction.....	1
Materials.....	1
Features and Functions.....	2
Limitations.....	3
Preparation for Installation.....	3
VOPEX Installation.....	4
VOPEX-C5VA-xC1000.....	4
Remote Unit Installation.....	6
ST-C5V2A-R-1000SP and ST-C5V-R-1000SP Remote Unit.....	6
ST-C5VA-R-600 and ST-C5V-R-600 Remote Unit.....	7
Connect the CAT5 cable.....	8
Plug-in and Boot Up.....	9
Video Quality Adjustment.....	10
VOPEX-C5VA-xC1000.....	10
More About DDC.....	10
Fine Video Quality Adjustment.....	10
ST-C5V-R-1000 Video-Only Extenders.....	10
Test Patterns for Color Skew Adjustment.....	10
ST-C5V-R-600 Video-Only Extenders.....	12
Technical Specifications.....	13
Interconnection Cable Wiring Method.....	14
RJ45 Connector Wiring.....	14
Troubleshooting.....	15
Warranty Information.....	15

## **TABLE OF FIGURES**

Figure 1- Connecting a VOPEX to a CPU.....	4
Figure 2- Make connections to 1000 Foot XTENDEX Remote Unit.....	6
Figure 3- Make connections to 600 Foot XTENDEX Remote Unit.....	7
Figure 4- Connect the CAT5 cable to the Remote Units.....	8
Figure 5- Connect an AC adapter to a 1000 Foot Remote Unit.....	9
Figure 6- DDC Update button for EDID data update.....	10
Figure 7- Video Adjustment buttons.....	11
Figure 8- Video quality adjustment buttons on XTENDEX Receiver.....	12
Figure 9- View looking into RJ45 female.....	14

## INTRODUCTION

The VOPEX® Series Cat5 Video/Audio Splitter/Extender (VOPEX) is designed to enable one Video/Audio source to be viewed and heard in 4 or 8 different remote locations. Remote video and audio devices can be located as much as 1000 feet away from the source via Category 5 unshielded twisted-pair cable. The VOPEX-C5VA-xC1000 (x=4 or 8 port) also allows a local video and audio device to be located near the source. Up to 4 or 8 receivers may be connected to the VOPEX.

**Note: If the audio support is not present in the Remote Unit(s), please disregard all audio references.**

The VOPEX will broadcast up-to-the-minute information to multiple remote monitors in real time. This high-resolution VGA video splitter (video port expander) is the ideal solution for any application requiring the flexibility to share information with several locations. Audio functionality using self-powered stereo speakers enhances your presentation.

The VOPEX Series Video/Audio Splitter/Extender is extremely simple to install and has been thoroughly tested to insure reliable performance. Through the use of Category 5 unshielded twisted-pair cable it is possible to economically increase the flexibility of a computer/home entertainment system. Here are some of the features and ways this can benefit the user:

- Allows the placement of monitors and self-powered stereo speakers/amplifiers in different remote locations where only these parts are needed.
- Provides an additional local access port allowing the A/V source to viewed and heard locally.
- Provides crisp and clear resolution up to 2048x1536 using NTI's 1,000' remote units and 1920x1440 using NTI's 600' remote units.
- Video quality adjustment is automatic for varying lengths of CAT5 cable
- Digital transmission of audio signals reduces any loss in quality.
- Compatible with all NTI A/V switches and splitters, enabling the joining of products to create a system that satisfies all networking needs.

## MATERIALS

**Materials Included with this kit:**

- VOPEX-C5VA-xC1000 (x=4 or 8 for number of CAT5 ports)
- 120VAC or 240VAC at 50 or 60Hz-5VDC/3A AC Adapter
- Line cord, country specific
- CD with a pdf file of this manual
- VEXT-3 15HD male-female video cable for connecting the VOPEX to the video source
- SA-3-MM 3.5mm stereo plug-stereo plug cable for connecting the VOPEX to the audio source

**Additional materials not supplied but are required:**

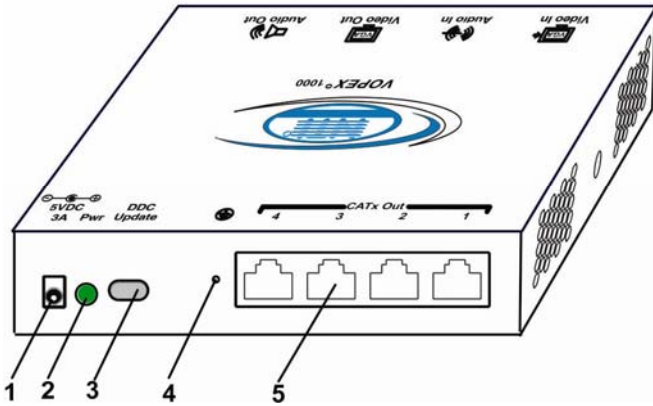
- CAT5 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 14 for proper EIA/TIA 568B wiring method)
- One or more of any of the following XTENDEX receivers:

Model	Maximum CAT5 Cable (in Feet)	Supported
ST-C5VA-R-600	600	Video + Audio
ST-C5V-R-600	600	Video Only
ST-C5VAX2-R-600	600	Dual Video + Audio
ST-C5VX2-R-600	600	Dual Video Only
ST-C5V2A-R-1000SP	1000	Video + Audio
ST-C5V-R-1000SP	1000	Video Only

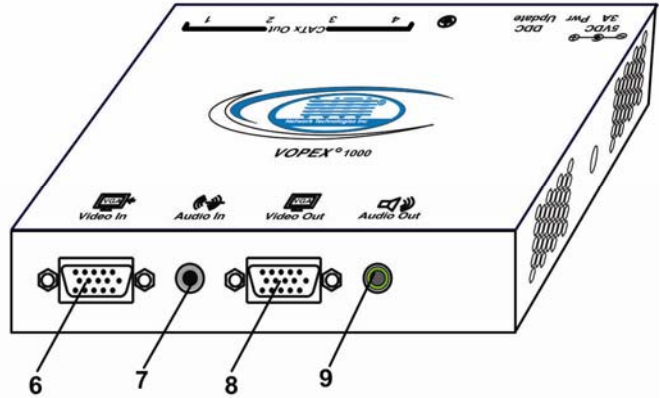
Contact your nearest NTI distributor or NTI directly for all of your KVM needs at **800-RGB-TECH (800-742-8324)** in US & Canada or **330-562-7070** (Worldwide) or at our website at <http://www.networktechinc.com> and we will be happy to be of assistance.

# FEATURES AND FUNCTIONS

Front View of VOPEX-C5VA-4C1000

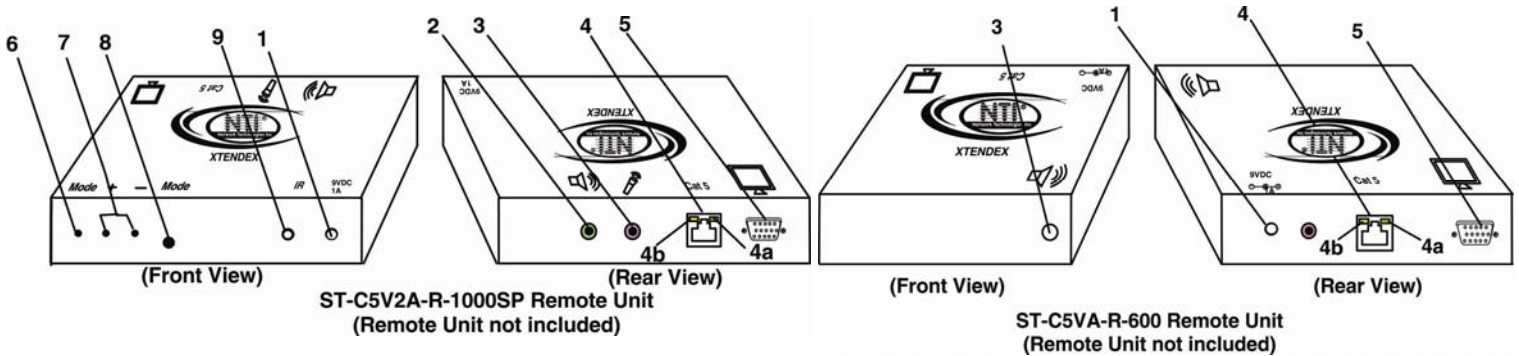


Rear View of VOPEX-C5VA-4C1000



## VOPEX

#	LABEL	CONNECTOR/LED	DESCRIPTION
1	5V 3.0A	1.3x3.5mm Power Jack	connection jack for 5VDC AC adapter
2	PWR	Green LED	illuminates when power has been supplied to the VOPEX
3	DDC Update	Gray Button	Press to transfer updated EDID data from remote units to CPU
4	Ground	Crimp Terminals	For attachment of earth ground to VOPEX
5	CATx Out 1-4	RJ45	for connecting CAT5 cables from XTENDEX Receivers
6	Video In	15HD Male	for connecting the video source
7	Audio In	3.5mm female stereo audio	for connecting the cable from the audio source
8	Video Out	15HD Female	for connecting the local user's monitor
9	Audio Out	3.5mm Female stereo audio	for connecting the local user's self-powered stereo speakers



## XTENDEX

#	LABEL	CONNECTOR/LED	DESCRIPTION
1	9V 1.0A	2.1x5.5mm Power Jack	connection jack for 9VDC AC adapter
2	Audio Out	green 3.5mm female stereo audio	for connecting the remote user's self-powered stereo speakers
3	Microphone	pink 3.5mm female stereo audio	for connecting a microphone ( <b>feature not supported as of this printing</b> )
4	CAT5	RJ45	for connecting CAT5 cable to VOPEX
4a	---	Green LED	for indicating power to the connector
4b	---	Yellow LED	for indicating data traffic between the VOPEX and XTENDEX
5	Monitor	15HD Female	for connecting the remote user's monitor
6	Mode	Button	for switching between skew and video quality adjustment
7	+ / -	Buttons	for fine video quality adjustment
8	Mode	Green and Red LED	for visual indication of skew or video quality adjustment modes
9	IR	IR Jack	for connection of an Infrared Sensor for remote control ( <b>feature not supported as of this printing</b> )

## LIMITATIONS

- The audio input of the VOPEX-C5VA-xC1000 is compatible with the following standard CPU audio outputs:
  - Line out - typically lime green in color
  - Speaker out- typically orange in color
  - Headphone out
- The audio outputs of the VOPEX and the XTENDEX Receiver are compatible with self-powered stereo speakers.

## PREPARATION FOR INSTALLATION

- Locations should be chosen for the monitors and speakers that also have space to connect the VOPEX and XTENDEX Remote 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 VOPEX and XTENDEX Remote 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.). **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 connection locations of the VOPEX and XTENDEX Receivers.
- 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 connection location of the VOPEX and XTENDEX Receivers, monitors, stereo speakers, and CPU to plug them into.
- 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 all devices 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 VOPEX and XTENDEX Series 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.**

Up to 600 feet of CAT5 cable can be installed between the VOPEX and any ST-C5V(A)-R-600 or ST-C5V(A)X2-R-600 Remote Unit.

Up to 1000 feet of CAT5 cable can be installed between the VOPEX and any ST-C5V(2A)-R-1000SP Remote Unit.

Use the charts on page 13 to determine what length of cable can be used for the desired resolution.

## VOPEX INSTALLATION

Any or all of the 4 models of Remote Units listed on page 1 can be connected to the VOPEX and any time. The features that are usable will depend on the models that are connected. For example, the DDC Update button will be effective for any 1000 foot Remote Units that are connected, but may not work on the 600 foot Remote Units (depending upon the features available at the time of manufacture).

### VOPEX-C5VA-xC1000

1. Make connections between the VOPEX and the audio and video source(s). (See Fig. 1.)
  - a) Connect the male 15HD cable end of a VEXT-3 to the VGA connector on the back of the video source.
  - b) Connect the female 15HD cable end of the VEXT-3 cable to the 15HD male connector marked "Video" on the VOPEX.
  - c) Connect one 3.5mm stereo plug end of the SA-3-MM cable into the 3.5mm female audio connector marked "line out", "spkr", or "headphones" on the audio source.

**Notes:**

*If all 3 connectors are available, use the connector marked "line out".*

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

*The "spkr" connector is typically orange, and may be marked with this symbol* 

*The "headphones" connector may be marked with this symbol* 

- d) Connect the other 3.5mm stereo plug end of the SA-3-MM cable into the 3.5mm female stereo audio connector marked "Audio In" on the VOPEX.

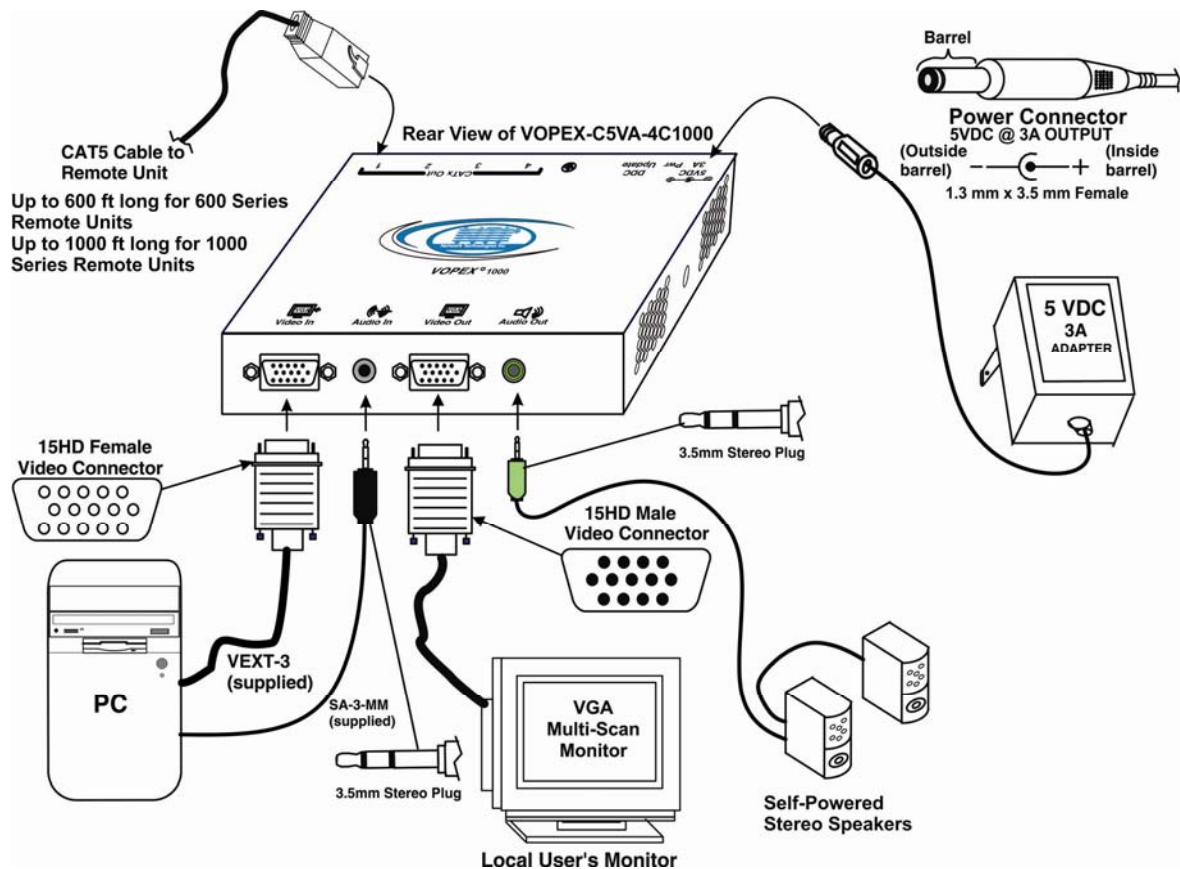


Figure 1- Connecting a VOPEX to a CPU

2. Connect the local user to the VOPEX.
  - a) Connect the cable from the local user's VGA monitor to the 15HD female connector marked "Monitor" on the VOPEX.
  - b) Connect the cable from the local speakers into the 3.5mm stereo audio connector marked "Audio Out" on the VOPEX.
3. Connect a CAT5 cable to any one of the "Cat5x" ports on the VOPEX. When properly inserted the cable end should snap into place.
4. Repeat step 3 for each Remote Unit to be connected to the VOPEX-C5VA-x.

**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 VOPEX Extender/Splitter 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.*



## REMOTE UNIT INSTALLATION

### ST-C5V2A-R-1000SP and ST-C5V-R-1000SP 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. 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)

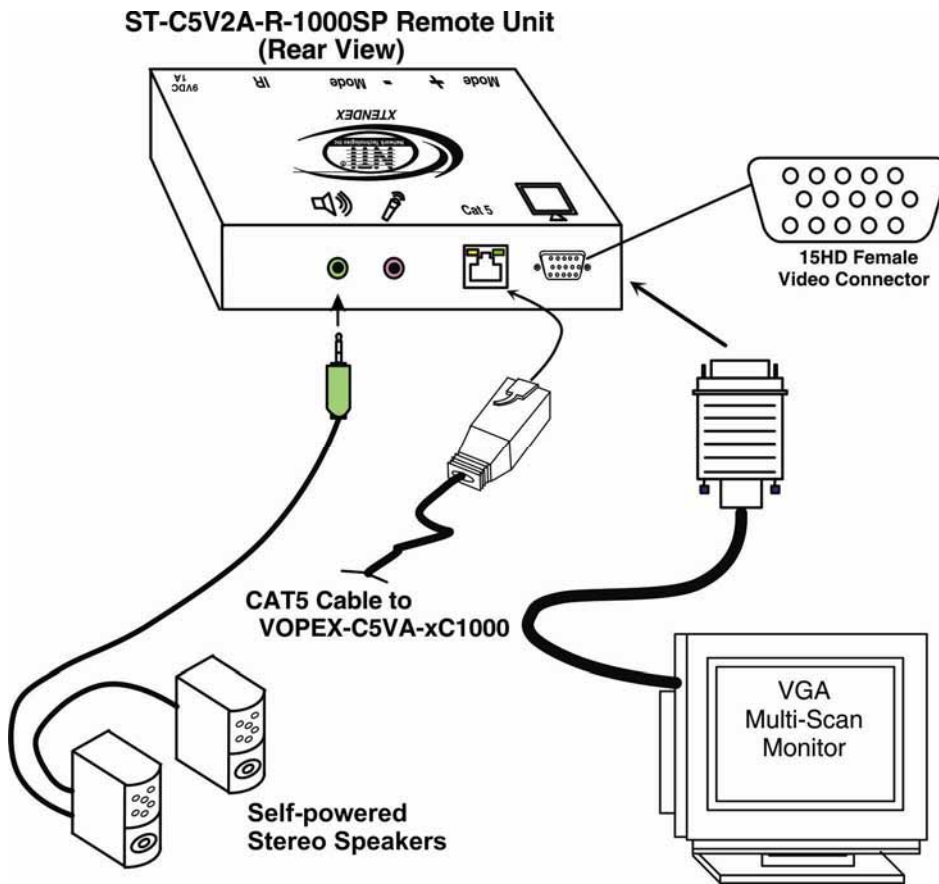


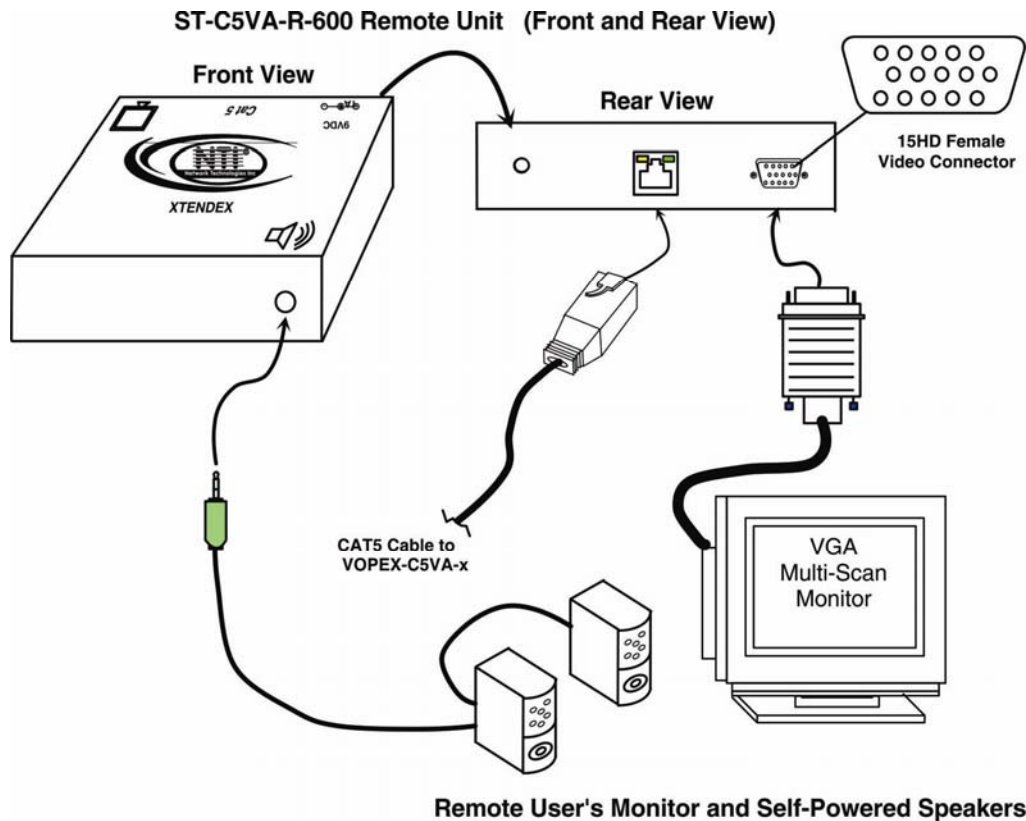
Figure 2- Make connections to 1000 Foot XTENDEX Remote Unit

4. Connect CAT5 cable as described on page 8.

## ST-C5VA-R-600 and ST-C5V-R-600 Remote Unit

**Note:** This section is applicable to both models of Remote Unit except for step 3. When installing ST-C5V-R-600 Remote Units (no audio support), disregard step 3.

1. Position a ST-C5VA-R-600 Remote Unit such that the CAT5 cable, the monitor cable, speaker cable, and the AC adapter power connector can each reach the Remote Unit comfortably.
2. Connect the remote user's monitor cable to the female 15HD video connector on the Remote Unit.
3. Connect the remote user's speakers to the 3.5mm female stereo connector on the Remote Unit (see Fig. 3).



**Figure 3- Make connections to 600 Foot XTENDEX Remote Unit**

**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 ST-C5VA-R-600 Remote Unit 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.

4. Repeat steps 1-3 for each ST-C5VA-R-600 Remote Unit to be connected to the VOPEX.
5. Connect CAT5 cable as described on page 8.

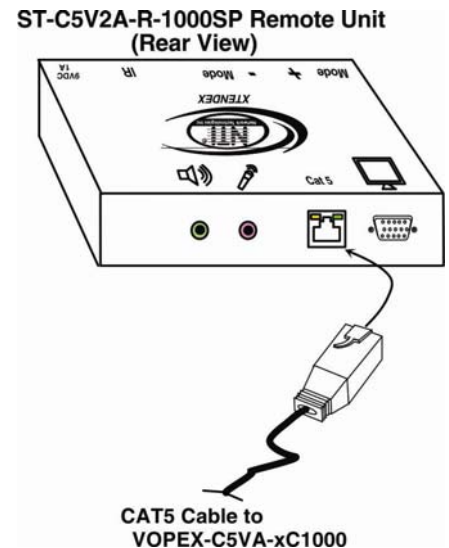
## Connect the CAT5 cable

Make sure the CAT5 cable has been installed in accordance with the "Preparation for Installation" instructions on page 3. Connect the CAT5 cable to the "Cat 5" port on each Remote Unit. (See Fig. 4) 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.*



**Figure 4- Connect the CAT5 cable to the Remote Units**

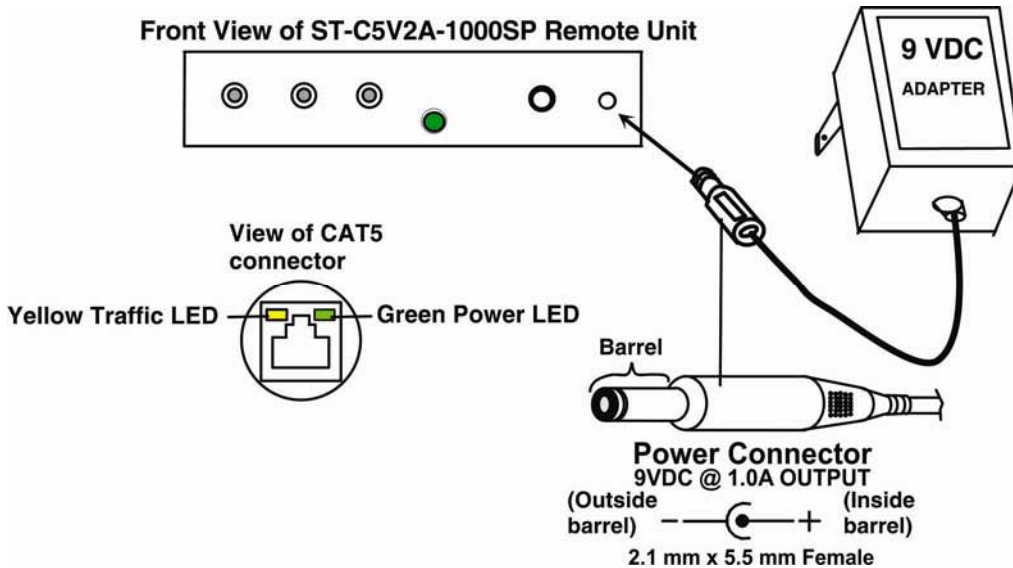
Up to 600 feet of CAT5 cable can be installed between the VOPEX and any ST-C5V(A)-R-600 Remote Unit.

Up to 1000 feet of CAT5 cable can be installed between the VOPEX and any ST-C5V(2A)-R-1000SP Remote Unit.

Use the charts on page 13 to determine what length of cable can be used for the desired resolution.

## PLUG-IN AND BOOT UP

1. Plug the power cord from each video device and the power supply for each audio device into a power outlet.
2. Connect the **5VDC 3A** power connector to the power port on the VOPEX (shown in Fig. 1- Page 5).
3. Connect a **9VDC 1A AC** adapter to each XTENDEX Remote Unit. Make sure the power connectors go into each port all the way.
4. Plug each AC adapter into a power outlet. The green LEDs on the VOPEX and the RJ45 connector of each XTENDEX Receiver should illuminate, indicating that a proper power connection has been made to them. (See Fig. 5)



**Figure 5- Connect an AC adapter to a 1000 Foot Remote Unit**

5. Turn ON the audio and video source(s), stereo speakers, and monitors. They should react as if they were directly connected to each other.

**Note:** The yellow LED on the RJ45 connector of each XTENDEX Receiver will blink anytime data traffic is passing between the VOPEX and the XTENDEX Receivers, indicating proper CAT5 cable connection and communication. (See Fig. 5)

## VIDEO QUALITY ADJUSTMENT

### VOPEX-C5VA-xC1000

When powering ON the VOPEX-C5VA-xC1000, video quality adjustment is done automatically to assure the image is as clear as possible. Once the VOPEX is up and running, an adjustment may need to be made to the resolution setting of the CPU, due to variations in compatible resolutions in the monitors connected to the Remote Units. To make sure the CPU has updated EDID data to choose from, press the "DDC Update" button. (See Fig. 6). The VOPEX will compare EDID tables from each monitor connected to a 1000 Series Remote Unit and supply the compatible resolutions to the CPU as available options. Once that has been done, select the desired resolution from the available settings in your operating system.

**Note:** The 600 Series extenders do not support the DDC Update feature as of this printing.

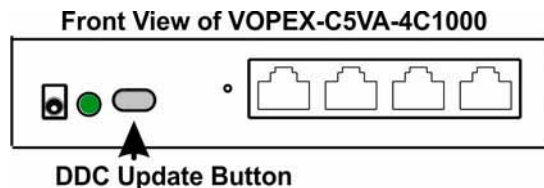


Figure 6- DDC Update button for EDID data update

### More About DDC

The recording and DDC transfer of EDID data from the monitor(s) enables the CPU to know what resolution settings are compatible with the monitor(s) connected. Once this data is provided to the CPU, your graphics card will either automatically update to the best resolution available (some models of graphic cards, not all), or you will need to choose from the available settings. Bear in mind, the choices of settings compatible with the monitors are not necessarily all going to be usable. If the length of CATx cable in your installation is too long for the selected resolution, the image at the Remote Unit monitor may not be viewable. Be sure to select a resolution setting that your installation will support. For supported combinations, see the chart on page 13.

Video quality may need to be re-adjusted if any of the following situations occur:

- A CAT5 cable is replaced, for any reason
- A new XTENDEX Remote unit is connected to the system
- CAT5 cable becomes disconnected from the VOPEX or any of the Remote Units

**Note:** When the cable is longer than 300 feet some colored lines can be seen at the black-to-white transitions. This is a normal behavior and is caused by the different twisting rates of each pair of wires in the CAT5 cable.

## Fine Video Quality Adjustment

### ST-C5V(A)-R-1000 Video-Only Extenders

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
- fine adjustment of color skew (alignment of red, green, and blue signals on the monitor)
- update DDC information between the monitor(s) and CPU

### 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.

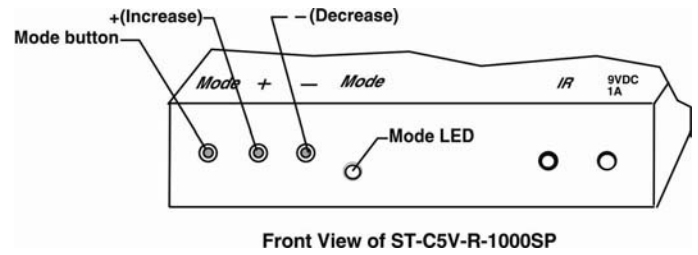


Figure 7- Video Adjustment buttons

**Note: The VOPEX 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 - slow	DDC remote update (press + or – to update DDC from <b>remote</b> monitor)
Fifth Press	Green Flashing - rapid	DDC local update (press + or – to update DDC from <b>locally</b> connected monitor)
Sixth Press <b>(Not useful to this product. Microphone not supported)</b>	Red Flashing- rapid or slow	Active microphone Flash rapid= remote Flash slow= local (press + or – to toggle which is active)
Seventh 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.**

When adjusting color skew, 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.

## ST-C5V(X2)-R-600 Video-Only Extenders

Video quality adjustment of the monitor connected to an ST-C5V-R-600 Remote Unit or ST-C5VX2-R-600 is performed manually at the Remote Unit.

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 press the "+" or "-" buttons on the Remote Unit (see Fig. 8) until the image is crisp and clear. Press the "+" button if the image is not crisp and clear enough. Press the "-" button 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 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.

**Note: When the cable is longer than 300 feet some colored lines can be seen at the black-to-white transitions. This is a normal behavior and is caused by the different twisting rates of each pair of wires in the CAT5 cable.**

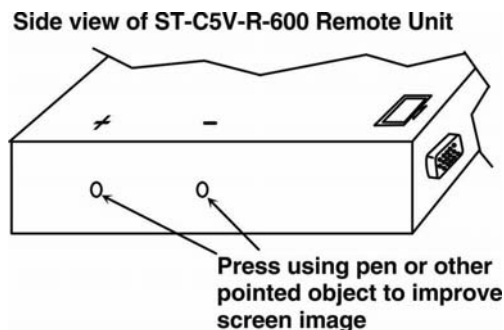


Figure 8- Video quality adjustment buttons on XTENDEX Receiver

**TECHNICAL SPECIFICATIONS**

Characteristic	With 600 Foot XTENDEX Remote Units Connected	With 1000 Foot XTENDEX Remote Units Connected
Video Compatibility	SVGA, XGA, VGA	VGA, SVGA, XGA, SXGA, UXGA
Video Quality Adjustment	Automatic, for up to 600 feet of CAT5 cable, with manual override (fine video quality adjustment can only be performed manually at the Remote Unit for ST-C5V-R-600)	Automatic, for up to 1000 feet of CAT5 cable, with manual override (fine video quality adjustment can only be performed manually at the Remote Unit)
Sync Types Supported	Separate and composite TTL Level and sync on green	Separate and composite TTL Level

General (All Models)	
Maximum Resolution	See charts below and on next page
Video Connectors	HD15 male to CPU HD15 female to monitor
Video Coupling	DC
Video Maximum I/O Levels	1.45Vp-p
Input / Output Impedance	75 Ohms
Input Horizontal Frequency Range	15kHz to 130 kHz
Input Vertical Frequency Range	30 Hz to 150 Hz
Audio Connectors	3.5mm female stereo audio connectors
Signal Type	Line Level, stereo, unbalanced
Audio Frequency Response	20Hz to 20KHz, ± 1dB
Signal-to-noise ratio	>76 dBA
Total Harmonic Distortion and Noise	0.017%, F=20-20KHz, RL=2K Ohm, Vout=1 Vrms
Stereo Crosstalk	-70 dB @ 1kHz
Audio Maximum I/O Levels	3.1Vp-p
Output Impedance	Max 2K Ohms, unbalanced
Interconnect Cable	CAT5/5e Solid UTP EIA/TIA 568B wiring w/ male RJ45 connectors
VOPEX-C5V(A)-4/8C1000 Power	120V or 240V at 50 or 60Hz- <b>5VDC/3A</b> via AC Adapter
Remote Unit Power	120V or 240V at 50 or 60Hz- <b>9VDC/1.0A</b> via AC Adapter
AC Adapter Power Connector- VOPEX	1.3X3.5mm connector, center positive
AC Adapter Power Connector- Remote Units	2.1 x 5mm connector, center positive
Operating Temperature Range	32°F to 100°F (0°C to 38°C)
VOPEX Size (In.) WxDxH	
VOPEX-C5VA-4C1000	5.13x3.45x1.08
VOPEX-C5VA-8C1000	5.13x3.45x1.68
XTENDEX Remote Unit Size (In.) WxDxH	
600 Foot Series	3.25x3.4x1
1000 Foot Series	5.05x3.1x1.235

**ST-C5V(2A)-R-1000SP Remote Units**

**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	800**	1920x1200 at 60Hz
CAT5/5e	600	1920x1440 at 60Hz
CAT5/5e	400	2048x1536 at 60Hz
CAT6	400**	1280x1024 at 60Hz
CAT6	300	1600x1200 at 60Hz
CAT6	200	2048x1536 at 60Hz

\*\*The performance of CAT5 and CAT5e shielded cable is not guaranteed beyond 800 feet (400 feet for CAT6 shielded).



### ST-C5VA-R-600 Remote Units

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

CABLE	DISTANCE (feet)	RESOLUTION
CAT5/CAT5e (UTP)	600	1024x768 at 60Hz
CAT5/CAT5e (UTP)	400	1280x1024 at 60Hz
CAT5/CAT5e (UTP)	300	1600x1200 at 60Hz
CAT5/CAT5e (UTP)	100	1920x1440 at 60Hz
CAT6 (UTP)	300	1024x768 at 60Hz
CAT6 (UTP)	200	1280x1024 at 60Hz
CAT6 (UTP)	100	1920x1440 at 60Hz

## INTERCONNECTION CABLE WIRING METHOD

The connection cable between the VOPEX and each XTENDEX Receiver is terminated with either RJ45 connectors or M12 connectors (see installation instruction for you model) and must be wired according to the EIA/TIA 568B industry standard. Wiring is as per the tables and drawings below.

### RJ45 Connector Wiring

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

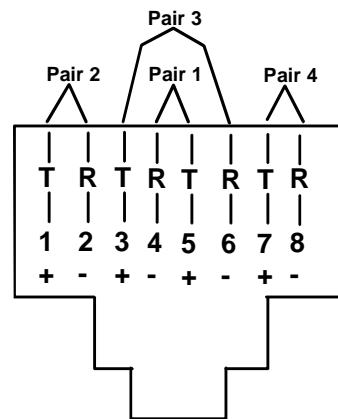


Figure 9- View looking into RJ45 female

**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.

## 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
<b>VOPEX or XTENDEX power LED does not illuminate</b>	<ul style="list-style-type: none"> <li>Power supply is not connected or plugged-in.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure each outlet is live and the AC adapters are plugged-in. (one for each Remote and one for the VOPEX)</li> <li>Make sure DC plugs are fully connected</li> </ul>
<b>No video on monitor/display</b>	<ul style="list-style-type: none"> <li>One or more video cables is loose or disconnected.</li> <li>No power to the VOPEX or the XTENDEX Receiver.</li> <li>Video Cable was not attached when CPU was booted.</li> <li>CAT5 cable is not connected.</li> </ul>	<ul style="list-style-type: none"> <li>Check all video cable connections</li> <li>Make sure power LEDs are illuminated for local and remote. If not, see solution for problem above.</li> <li>With all the cables properly connected, reboot the CPU.</li> <li>Check cable connections. Make sure they are snapped-in properly and completely and reboot.</li> </ul>
<b>The picture on the monitor is black and white, rather than color</b>	The video cable was not attached to the CPU when it was booted.	With the cables all properly connected, reboot the CPU.
<b>Monitor sometimes loses sync, causing it to go blank for a second or two</b>	<ul style="list-style-type: none"> <li>Electrical power system is very noisy, particularly the ground.</li> <li>The CAT5 cable is not properly connected.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure the interconnection cable is not near any power lines.</li> <li>Check cable connections. Make sure they are snapped-in properly and completely.</li> </ul>
<b>A constant vertical wobble appears down the screen</b>	<ul style="list-style-type: none"> <li>CAT5 cable is too close to a strong power source.</li> <li>Monitor is too close to a power source or another monitor.</li> </ul>	<ul style="list-style-type: none"> <li>Reroute CAT5 cable if possible.</li> <li>Move the monitor</li> </ul>
<b>Video picture is not sharp or is smeared</b>	<ul style="list-style-type: none"> <li>All Video Cables are not firmly seated.</li> <li>CAT5 cable is too long.</li> <li>Video was not manually adjusted</li> </ul>	<ul style="list-style-type: none"> <li>Check all connections. Make sure all cables are fully seated.</li> <li>Verify length is within specified limits.</li> <li>Adjust video quality at the receiver (See "Video Quality Adjustment" on page 11.)</li> </ul>
<b>No audio</b>	<ul style="list-style-type: none"> <li>Audio cable is not properly plugged in</li> <li>Speakers are not plugged in</li> </ul>	<ul style="list-style-type: none"> <li>Check all cable connections</li> <li>Verify speakers are powered (if applicable)</li> </ul>

## 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.