



NTI® NETWORK
TECHNOLOGIES
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XTENDEX™ Series

ST-C5V

VGA Video Extender

Installation and Operation Manual



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: Shielded CAT 5,5e, or 6 cable must be used to connect to LOCAL and REMOTE units in order to meet CE emission requirements.

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 ST-C5V CAT5 VGA Video Extender is designed to enable the separation of a computer monitor from the source of its signal by as much as 1000 feet in addition to having a locally connected monitor. That source would be in the form of a CPU, KVM switch, Video Splitter, etc. It 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 system. Here are some of the features and ways this can benefit any workplace:

- Allows the placement of a monitor in a location where only viewing the monitor is needed without having the computer and keyboard there with it.
- Increases desk and floor space.
- Compatible with XGA, VGA, and SVGA systems.
- Crisp and Clear resolution up to 1280 x 1024 - @ 1000 feet,
1600 x 1200 - @ 600 feet, and
1900 x 1200 - @ 400 feet.
- Compatible with all NTI switches and splitters, enabling the joining of products to create a system that satisfies all networking needs.
- Compatible with PC, SUN, and MAC computers. (Contact our sales department for details.)
- Video quality adjustment is achieved through easy-access manual adjustment buttons. Optimum image quality can be further adjusted through jumper placement.

MATERIALS

Materials Supplied with this kit:

- ✓ NTI ST-C5V Video Only Extender Local Unit
- ✓ NTI ST-C5V Video Only Extender Remote Unit
- ✓ Two-120VAC or 240VAC -5VDC/2A AC Adapters
- ✓ VEXT-3 3' Video Cable
- ✓ This manual

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

- Video adapter for connection between the Local and a non-VGA MAC or SUN computer.
- Video adapter/cable for connection between a non-VGA MAC or SUN monitor and the CAT5 Remote Unit.
- VEXT-x if the Local Unit will be located further than 3' from the computer or KVM switch.
- CAT5 unshielded twisted-pair cable(s) terminated with male RJ45 connectors wired straight thru- pin1 to pin1, etc. (see pg. 6 for proper EIA/TIA 568 B wiring method).

Contact your nearest NTI reseller 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.

PREPARATION FOR INSTALLATION

- A location should be chosen for the monitor that also has space to mount the Remote Unit within the distance provided for by the cable from the monitor. If an extension cable is needed, contact NTI for the cable required.
- The CAT5 cables must be run to the locations where the Remote and Local Units will be mounted. 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.

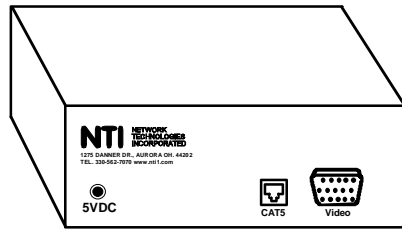
- A properly grounded, polarized, and preferably surge-protected 120V or 240V electrical outlet (depending on the AC adapter being used) must be installed close enough to the mounting locations of the Remote and Local Units as well as the monitor to plug them into.
- All cables should be installed in 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 the computer CPU and monitor 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.

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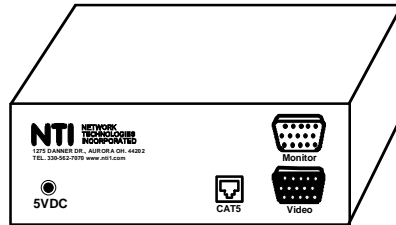


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INSTALLATION



ST-C5V (REMOTE UNIT)
(Rear View)



ST-C5V (LOCAL UNIT)
(Rear View)

The Local Unit

1. Position the Local Unit where the CAT5 cable, the AC adapter power cable, and the video cable from the CPU (or other device into which it will be plugged) can reach the Local Unit comfortably.
2. Connect one end of the video cable to the VIDEO port on the back of the Local Unit.
3. Connect the other end of the video cable to the video connector on the back of the CPU.

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.

Sun 13W3 Video Connector



If a MAC CPU is being connected, depending upon its video connector, it may be necessary to attach an NTI#15DM-15HDF (MAC video port-to-VGA adapter) to the video port on the CPU first, and then connect the video cable to the adapter.

Mac 15DB Video Connector



NOTE: This product does not support sync on green.

4. Connect the CAT5 cable to the "CAT5" port on the back of the Local Unit. (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.
5. If a local monitor is being used, connect it to the 15HD female MONITOR port on the back of the Local Unit.

The Remote Unit

1. Position the Remote Unit such that the CAT5 cable, the monitor cable, and the AC adapter power connector can each reach the Remote Unit comfortably.
2. Connect the monitor cable to the VIDEO port on the back of the Remote Unit.

If a SUN monitor is being used, depending upon its video connector, it may be necessary to apply NTI cable adapter 13W3M-15HDF to the monitor and a VEXT-xx-MM cable between the adapter and the Remote Unit. (NTI has various lengths of the VEXT-xx-MM cables available. Just replace the "xx" in the part number with the length in feet that has been ordered.)

If a MAC monitor is being used, depending upon its video connector, it may be necessary to apply NTI cable adapter 15DM-15HDF to the monitor first and then add a VEXT-xx-MM cable between the adapter and the Remote Unit. (NTI has various lengths of the VEXT-xx-MM cables available. Just replace the "xx" in the part number with the length in feet that has been ordered.)

3. Make sure the CAT5 cable has been installed in accordance with the "Preparation for Installation" instructions on page 2. Connect the CAT5 cable to the "CAT5" port on the back of the Remote Unit. (If an RJ45 wall outlet is being used, connect the other end of the extension cable to the RJ45 wall outlet.) When properly inserted the CAT5 cable end should snap into place.



WARNING: *Never connect the ST-C5V 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.*

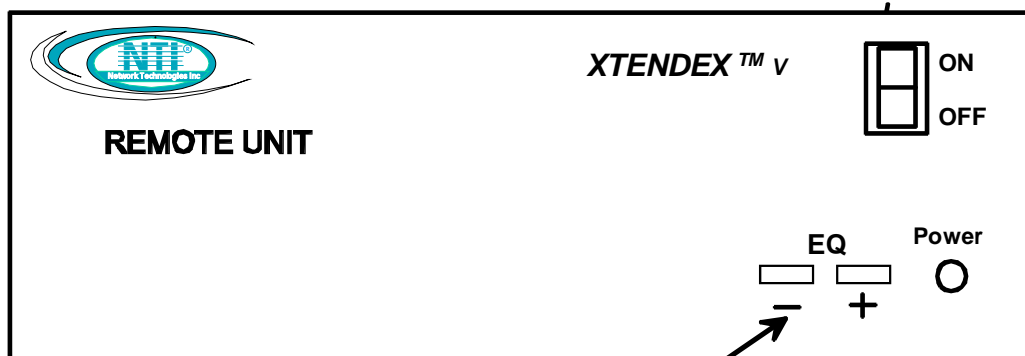
Plug-in and Boot Up

1. Plug the power cord from the monitor into the power outlet.
2. Connect the AC adapter power connectors to the 5VDC port on the back of each of the Remote and Local Units. Make sure the power connectors go into the ports all the way. Plug each AC adapter into a power outlet. Flip the power switch to "ON". The "Power" LEDs on the Remote Unit and Local Unit should both illuminate, indicating that proper power connections have been made.
3. Turn ON the CPU and monitor(s). They should each react as if they were directly connected to each other.

ADJUST THE VIDEO QUALITY

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 variations in the length of the wires in the CAT5 cable. It may be necessary to press the "+" or "-" buttons (labeled "EQ" on the front of the Remote Unit) until the image is crisp and clear. 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. 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.

(FRONT VIEW)



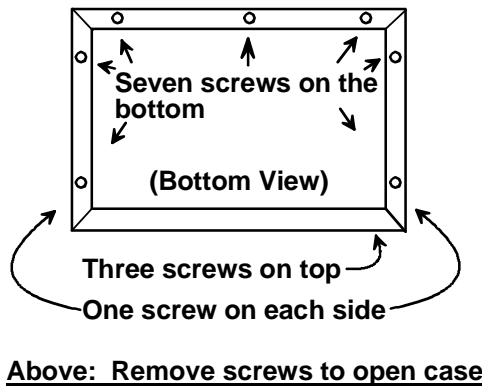
**VIDEO QUALITY ADJUSTMENT BUTTONS
PRESS AS NEEDED TO IMPROVE SCREEN IMAGE**

Jumper Settings

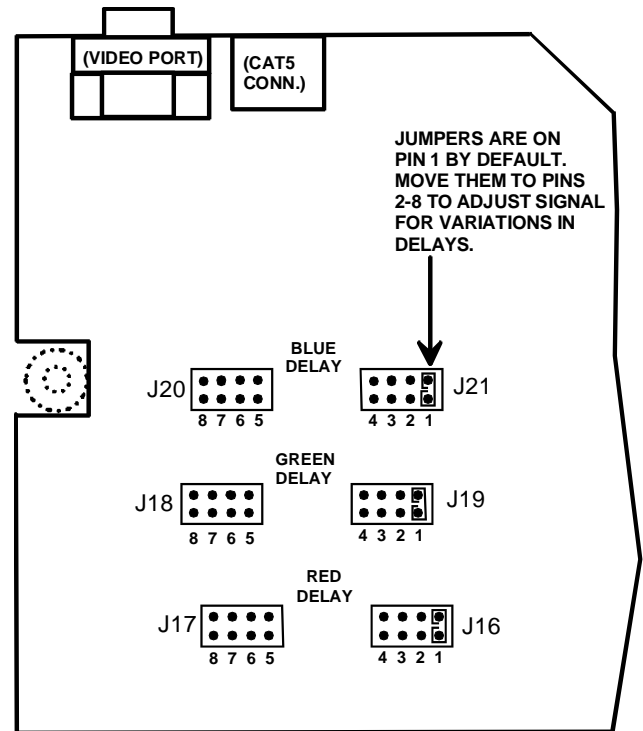
If the cable is longer than 400 feet, due to the different twisting rates of each pair of wires in the cable, variations in the signal delays between the red, green, and blue channels will occur. The variations could result in poor image convergence (i.e. instead of a white vertical line you will see three vertical lines; red, green, and blue). The variation may be compensated for by making adjustments to jumper settings inside the Remote Unit. Movement of the jumpers will vary the timing of the signals and ultimately balance them out.

To verify if such an adjustment is actually needed, open an application with a white window (i.e. Word) and move the window to the right side of the screen to create a white-to-black transition. If a colored vertical line can be seen at the edge of the white window the adjustment may be needed. According to the color of the line and the chart below, change the jumper position until a clean white-to-black transition is obtained. The default position is all jumpers on pin 1.

To change the jumper position, first turn power OFF to the Remote Unit. Carefully remove the twelve screws (image below) holding the two halves of the case together. Once the screws are removed, turn the case right side up and it on a table or other firm and flat surface. Pull the case halves apart to reveal the circuit board inside. The chart below explains which jumper(s) need to be moved depending on the color viewed.



Color of vertical line	J16-17 (Red Delay)	J18-19 (Green Delay)	J20-21 (Blue Delay)
No Colored Line	N/C	N/C	N/C
Red	N/C	Change	Change
Yellow	N/C	N/C	Change
Green	Change	N/C	Change
Blue-Green	Change	N/C	N/C
Blue	Change	Change	N/C
Magenta	N/C	Change	N/C



CIRCUIT BOARD INSIDE REMOTE UNIT

Position 1 creates no variation in the delay, position 8 will create a maximum variation in the delay.

The amount the jumper must be moved will vary depending on the amount of variation in wire length. To move the jumper;

1. Disconnect power to the Remote Unit.
2. Move desired jumper(s) (refer to the chart above).
3. Reconnect power to the Remote Unit.
4. Check to see if the colored line is still there.
5. If yes, repeat steps 1-4 until the white-to-black transition is clean.

When the image is satisfactory, re-assemble the case for the Remote Unit.

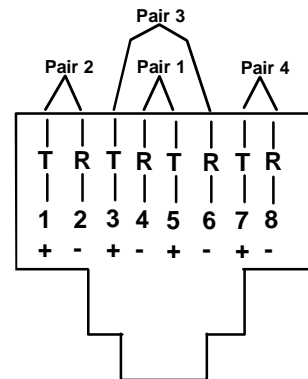
TECHNICAL SPECIFICATIONS

Maximum resolution	1280 x 1024 / 60Hz- up to 1000 feet 1600 x 1200 / 60Hz- up to 600 feet 1900 x 1200 / 60Hz- up to 400 feet
Video Compatibility	SVGA, XGA, VGA
Video Quality Adjustment	Variable (Manually-see pg. 4)
Video Coupling	DC
Video Connectors	HD15 male to PC HD15 female to monitor
Sync types supported	Separate and composite TTL level
Interconnect Cable	CAT 5 Solid UTP EIA/TIA 568 B wiring w/RJ45 connectors
Local and Remote Unit Power	120V or 240V at 50 or 60Hz-5VDC/2A via AC Adapter
Size (In.) WxDxH	Desktop Case- 8x6.2x2.6 Rack Mount- 19x10x3.5

INTERCONNECTION CABLE WIRING METHOD

The connection cable between the Remote and Local Units is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568 B 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 Socket)

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.



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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 encountered while installing this product, please look over the troubleshooting chart below. If an answer is not found in the chart, 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
Local or Remote Unit power LED does not illuminate	<ul style="list-style-type: none"> Power supply is not connected or plugged-in. 	<ul style="list-style-type: none"> Make sure outlet is live and AC adapters are plugged in. Also make sure power jacks are fully connected to the Local and Remote Units.
No Video on monitor	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Check all video cable connections. Make sure power LED is illuminated for the Local and Remote Units. If not, see Solution for “Local or Remote Unit power LED does not illuminate” above. With all the cables properly connected, reboot the CPU.
Video Picture is not sharp or is smeared	<ul style="list-style-type: none"> All Video Cables are not firmly seated. Video quality is not set properly. Resolution is set too high for the length of cable being used. Delay jumpers are not set properly. 	<ul style="list-style-type: none"> Check all connections. Make sure all cables are fully seated. See pg. 4 for instruction on “Adjust the Video Quality”. Verify length is within specified limits. See Technical Specifications (pg. 6) and reduce resolution. See pg. 5 for instruction on jumper settings.
Monitor sometimes loses sync, causing it to go blank for a second or two	Electrical power system is very noisy, particularly the ground.	Make sure the interconnection cable is not near any power lines.
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.	Re-route CAT5 cable if possible.

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WARRANTY INFORMATION

The warranty period on this product (parts and labor) is one (1) year 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.

**ST-C5V
REMOTE UNIT**

SERIAL NO: _____

DATE: _____

INSPECTED BY: _____

**ST-C5V
LOCAL UNIT**

SERIAL NO: _____

DATE: _____

INSPECTED BY: _____