



**NETWORK  
TECHNOLOGIES  
INCORPORATED**

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**VOPEX<sup>®</sup> Series**

# **VOPEX-C5HDMI-4**

## **HDMI Digital Video and Audio Splitter/Extender via CAT6**

### **Installation and Operation Manual**



**VOPEX-C5HDMI-4  
Front and Rear View**



**ST-C5HDMI-150 Remote Unit  
Front and Rear View  
(Sold Separately)**

**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: CAT6 connection cable used between NTI VOPEX and XTENDEX Remote or any XTENDEX Series products should not be run underground, outdoors or between buildings.***

**WARNING: Outdoor or underground runs of CAT6 cable could be dangerous and will void the warranty.**

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## INTRODUCTION

The VOPEX® HDMI Splitter/Extender simultaneously distributes digital video and audio signals from one video source to up to four displays, each located up to 150 feet away using CAT6 solid UTP cable.

The VOPEX system consists of two components: the HDMI broadcast unit, which connects to the host video source and also supplies video to a local display, and an XTENDEX remote unit for each remote display. The units are interconnected by CAT6 solid UTP cable.

- Broadcast real-time HDMI video to multiple display locations.
- Transmits an uncompressed HDMI signal over one CAT6 cable
- Supports HDTV resolutions up to 1080p and computer resolutions up to 1920x1200
- Compliant with HDMI 1.2 and HDCP 1.1 standards
- Easily expandable. Add remote units as you add monitors
- Inexpensive CAT6 cable replaces bulky video cables
- Supports embedded digital audio through HDMI compatible TVs or audio receivers
- Auto gain, auto skew, and auto EQ for plug-and-play setup and zero maintenance
- Ideal solution for digital signage applications

### Optional:

Daisy-chain receivers allow you to extend one video source to multiple displays and to reach longer distances. The daisy-chain receivers are available in one-output daisy-chain and three-output daisy-chain options:

**ST-C5HDMI-150-** Single-output remote unit

**ST-C5HDMI-RD-150-** Single-output daisy-chain remote unit

**ST-C5HDMI-RD3-150-** 3-output daisy-chain remote unit

### Features:

#### **ST-C5HDMI-150 Remote Unit (Receiver)**

- One female HDMI-A port for HDTV or computer display.
- One female RJ45 port for receiving high definition video/audio signals and DDC signal.

#### **Optional ST-C5HDMI-RD-150 One-Output Daisy-Chain Remote Unit (Receiver)**

- Enables a daisy chain of five receivers at 1080p / eight receivers at 1080i/720p.
- One female HDMI-A port for HDTV or computer display.
- One female RJ45 port for receiving high definition video/audio signals and DDC signal.
- One female RJ45 port for sending high definition video/audio signals and DDC signal.
- Only every third receiver in daisy-chain needs power supply.

#### **Optional ST-C5HDMI-RD3-150 Three-Output Daisy-Chain Remote Unit (Receiver)**

- Enables a daisy chain of five receivers at 1080p / eight receivers at 1080i/720p.
- Each receiver supports three displays for a total of fifteen displays at 1080p and 24 displays at 1080i.
- Three female HDMI-A ports for HDTVs or computer displays.
- One female RJ45 port for receiving high definition video/audio signals and DDC signal.
- One female RJ45 port for sending high definition video/audio signals and DDC signal.
- Only every third receiver in daisy-chain needs power supply.

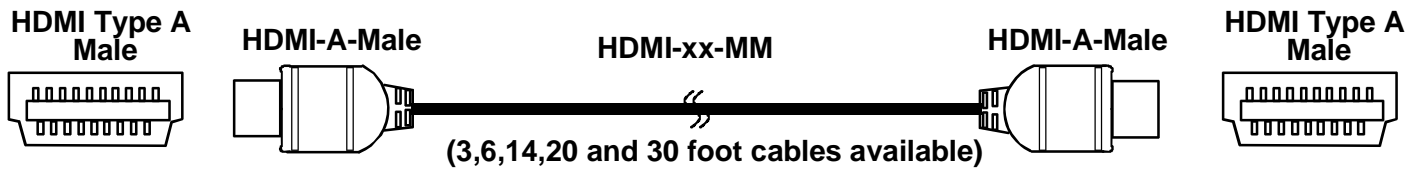
## MATERIALS

**Materials supplied with this kit:**

- NTI VOPEX-C5HDMI-4 Splitter
- 110-220VAC, 50 or 60Hz-12VDC/3A AC Adapter
- This manual

**Materials Not supplied but *REQUIRED*:**

- XTENDEX HDMI Remote(s)
- CAT6 Solid unshielded twisted pair (UTP) cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see page 9 for proper EIA/TIA 568 B wiring method) Stranded cable is not recommended for use.
- A HDMI-xx-MM HDMI male-to-male cable for the video source and another for the display to be connected to the XTENDEX Remote Unit. Cables are available from NTI where x= 3, 6, 14, 20, and 30 feet.

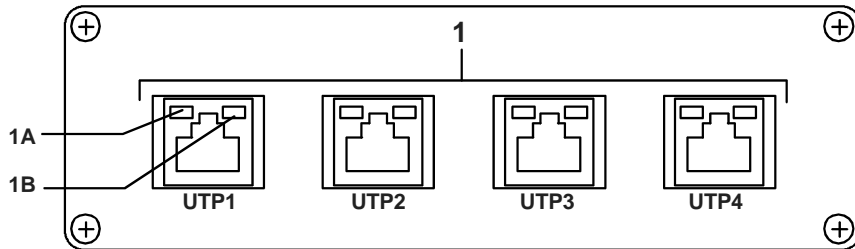
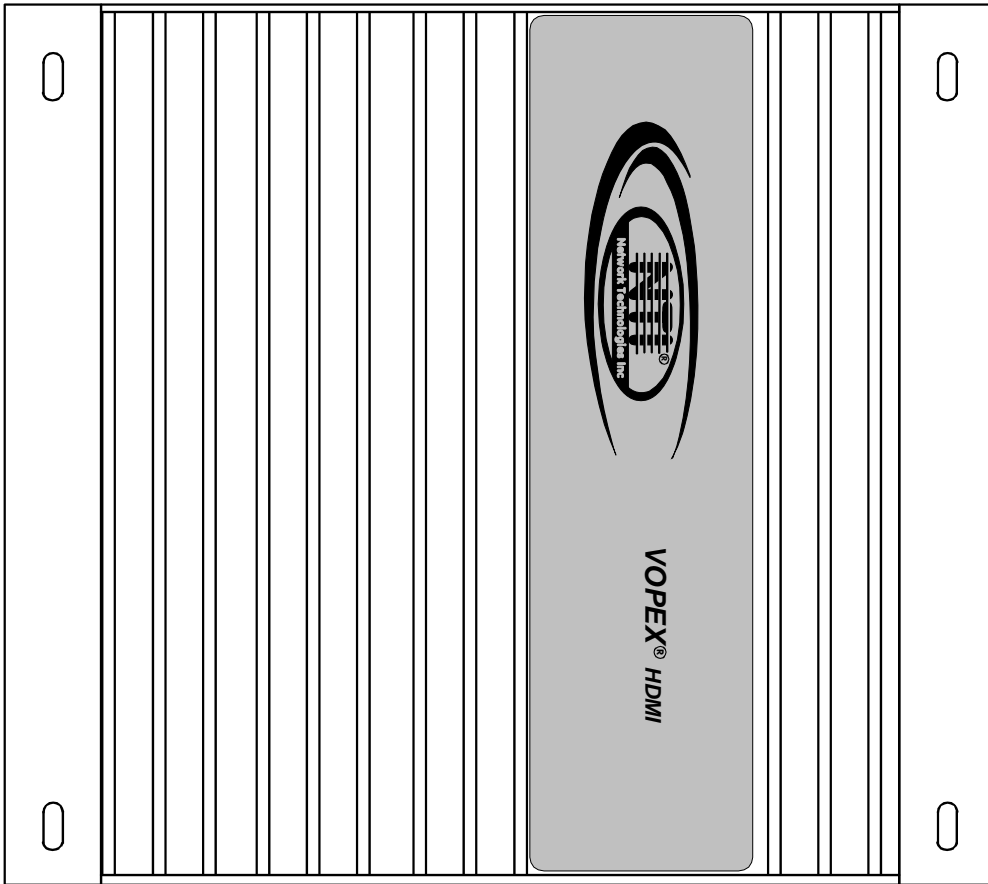


Also available from NTI are DVI-HDMI-x-MM DVI-D Single link male to HDMI male cables (where x= 3, 6, 10, and 15 feet)

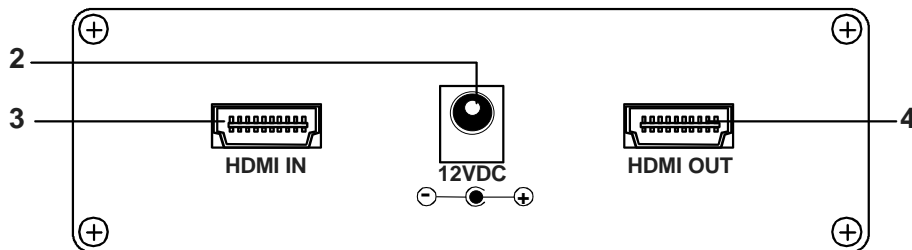


*Cables can be purchased from Network Technologies Inc by calling (800) 742-8324 (800-RGB-TECH) in the US and Canada or (330) 562-7070 (worldwide).*

**FEATURES AND FUNCTIONS**



Front View of VOPEX-C5HDMI-4



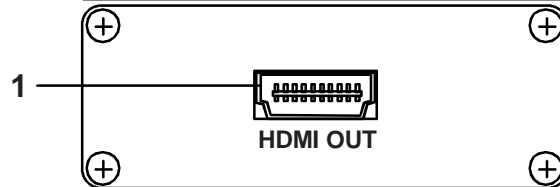
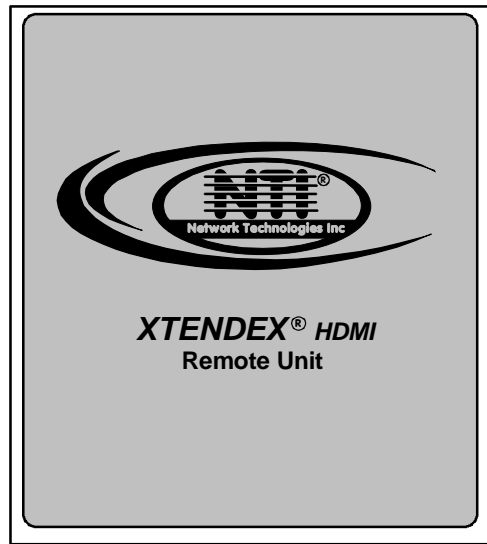
Rear View of VOPEX-C5HDMI-4

- 1. **UTP1-4**- RJ45 Females- for connecting CAT6 cables to go to XTENDEX Remote Units
  - 1A. **Communication LED**- for indication that HDMI signals are being received
  - 1B. **Power LED**- for indication that the connector is receiving power
- 2. **12VDC**- for connection of AC adapter
- 3. **HDMI IN**- HDMI female connector- for connection to HDMI cable from video/audio source
- 4. **HDMI OUT**- HDMI female connector- for connection to HDMI cable from a display

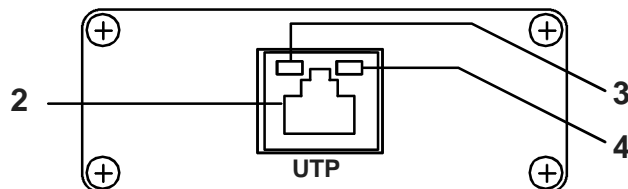
## XTENDEX Remote Units

(Sold Separately)

Top View of ST-C5HDMI-150 Remote Unit



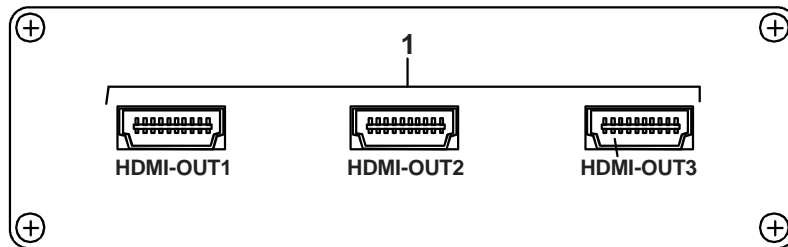
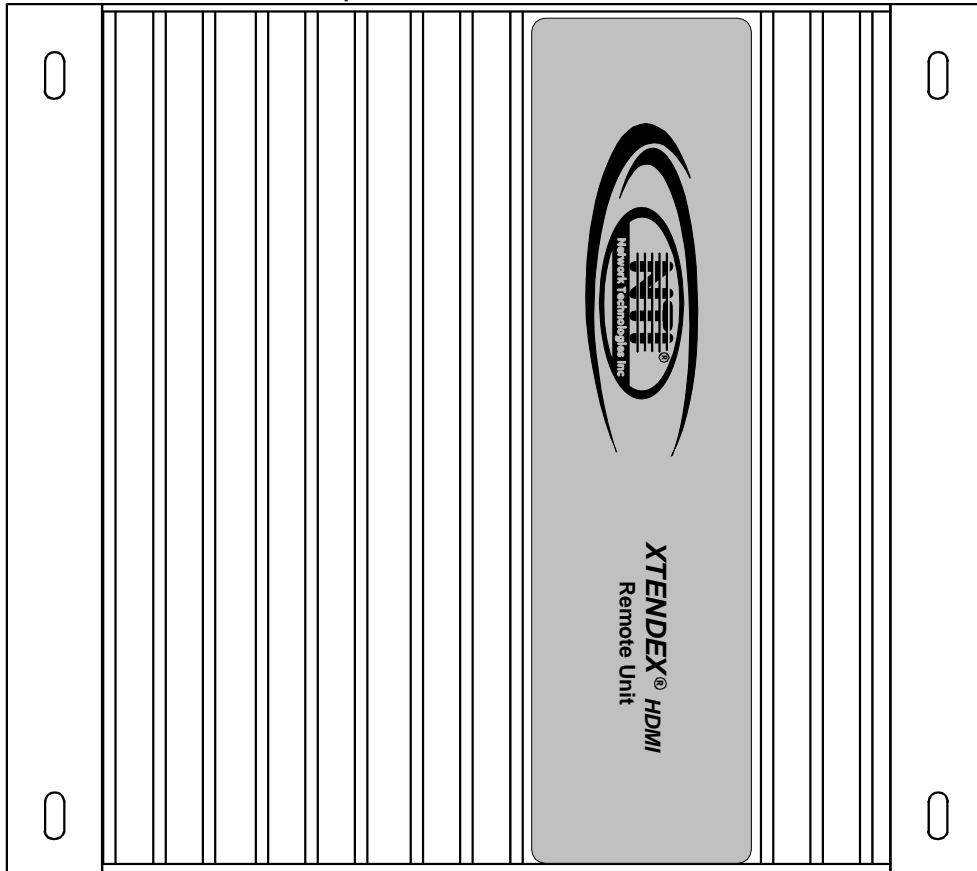
Front View of ST-C5HDMI-150 Remote Unit



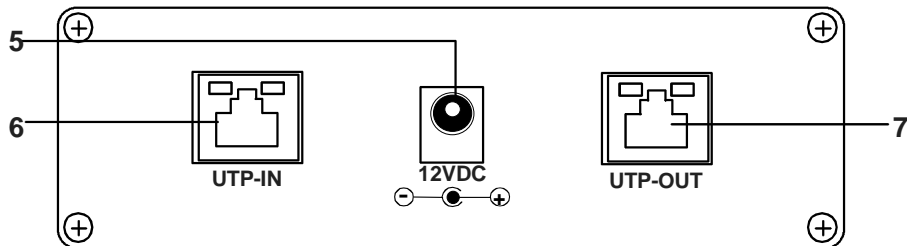
Rear View of ST-C5HDMI-150 Remote Unit

1. **HDMI OUT**- HDMI female connector- for connection to HDMI cable from a display
2. **UTP**- RJ45 female connector- for connection of Unshielded Twisted Pair CAT6 cable between VOPEX and Remote Unit
3. **Communication LED**- for indication that HDMI signals are being received
4. **Power LED**- for indication that the Remote Unit is receiving power

Top View of ST-C5HDMI-RD3-150



Front View of ST-C5HDMI-RD3-150

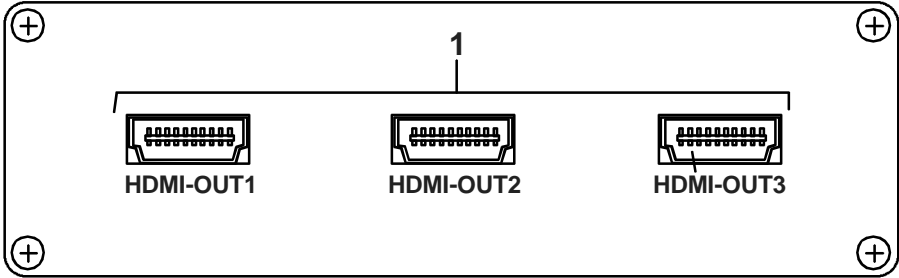
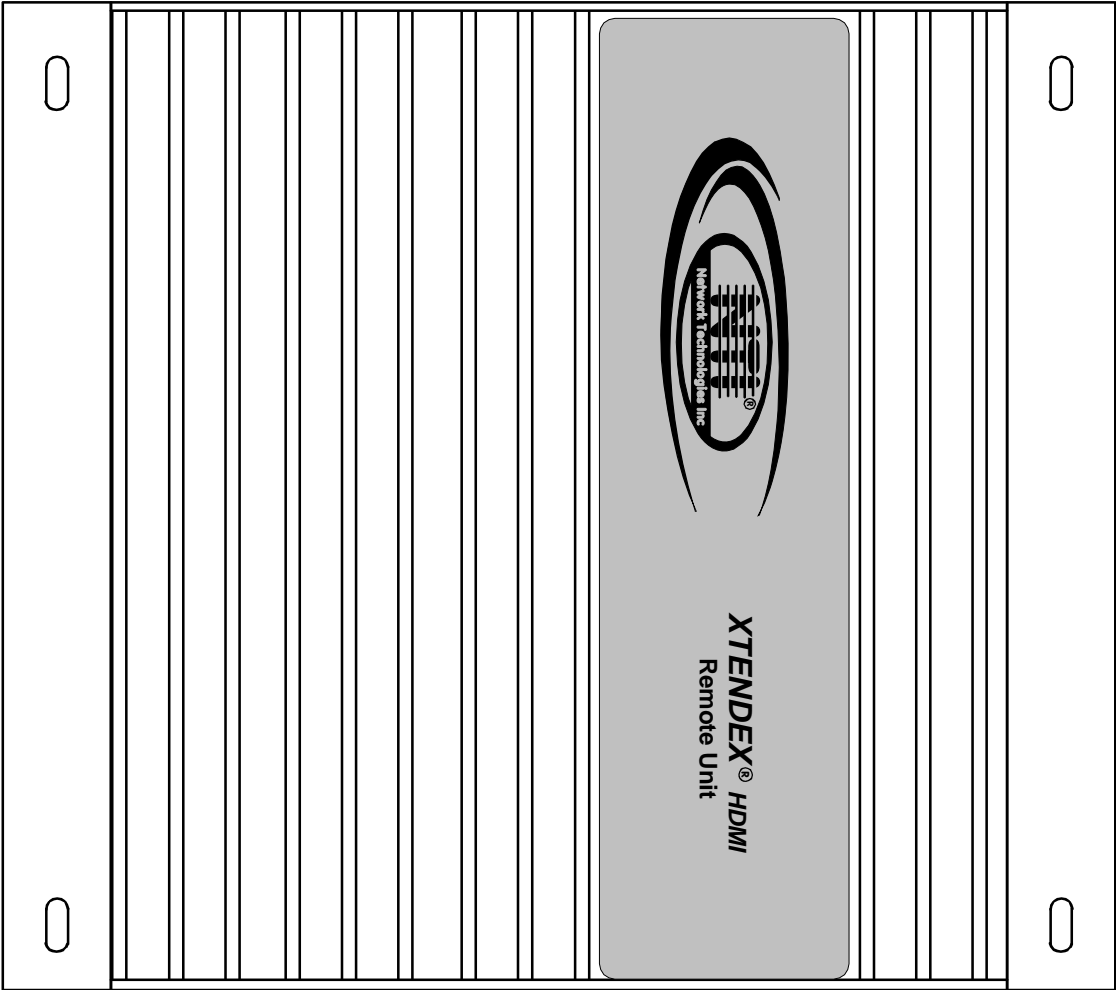


Rear View of ST-C5HDMI-RD3-150

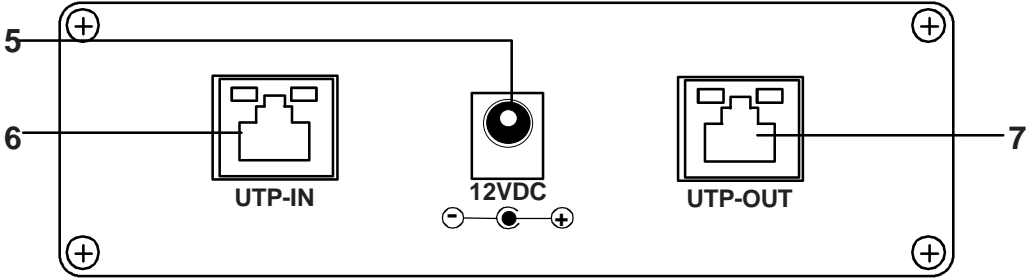
- 5. **12VDC**- Connector for attaching AC adapter
- 6. **RJ45 In**- RJ45 female connector- for connection of Unshielded Twisted Pair CAT6 cable from a VOPEX or an upstream Remote Unit (Remote Unit closer in the daisy-chain to the Local Unit)
- 7. **RJ45 Out**- RJ45 female connector- for connection of Unshielded Twisted Pair CAT6 cable to a Remote Unit downstream in the daisy-chain
- 8. **AUX Port**- RJ45 female connector- NOT SUPPORTED AS OF THIS PUBLICATION



Top View of ST-C5HDMI-RD3-150



Front View of ST-C5HDMI-RD3-150



Rear View of ST-C5HDMI-RD3-150

## CABLE CONNECTIONS

1. Connect a CAT6 solid UTP cable (up to 150 feet) from a “UTPx” port on the VOPEX to the “UTP” port on the Remote Unit. Connect up to 3 more remote units in the same fashion.

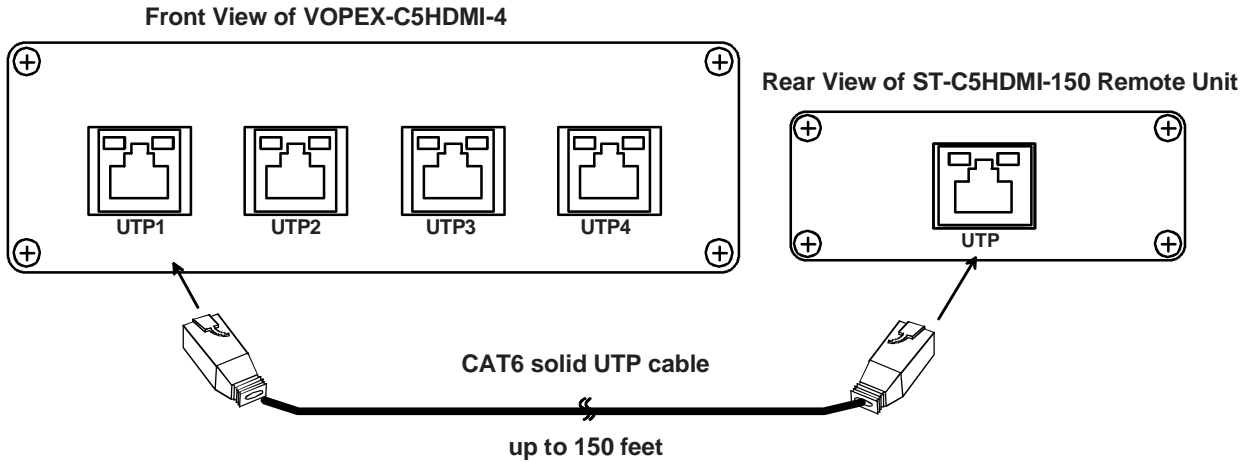


Figure 1- Connect the Remote to the VOPEX with CAT6 solid UTP cable

2. Connect the AC adapter to the VOPEX and plug it into an AC receptacle.

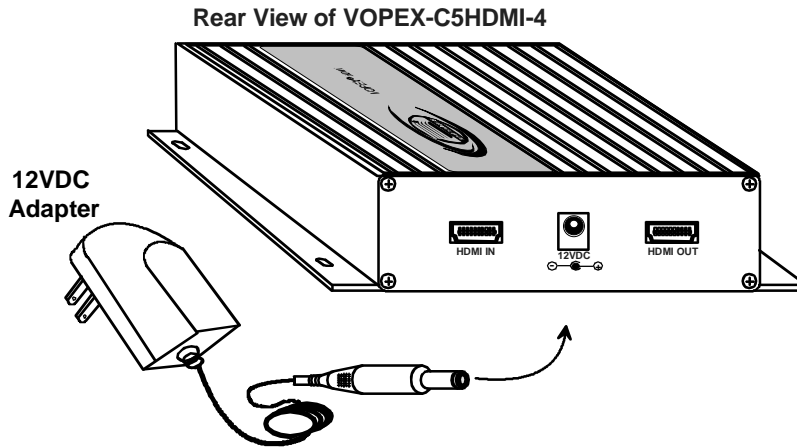
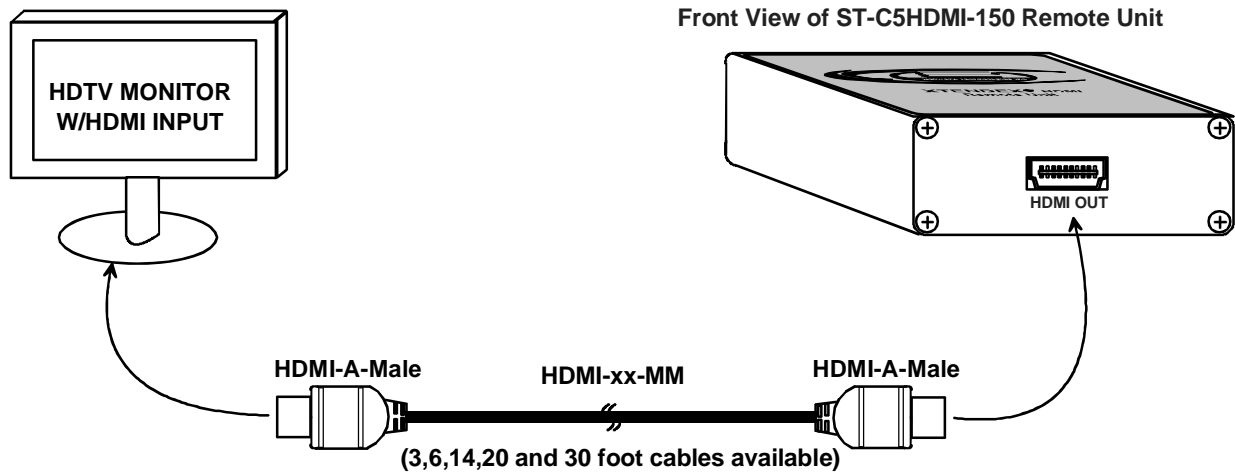


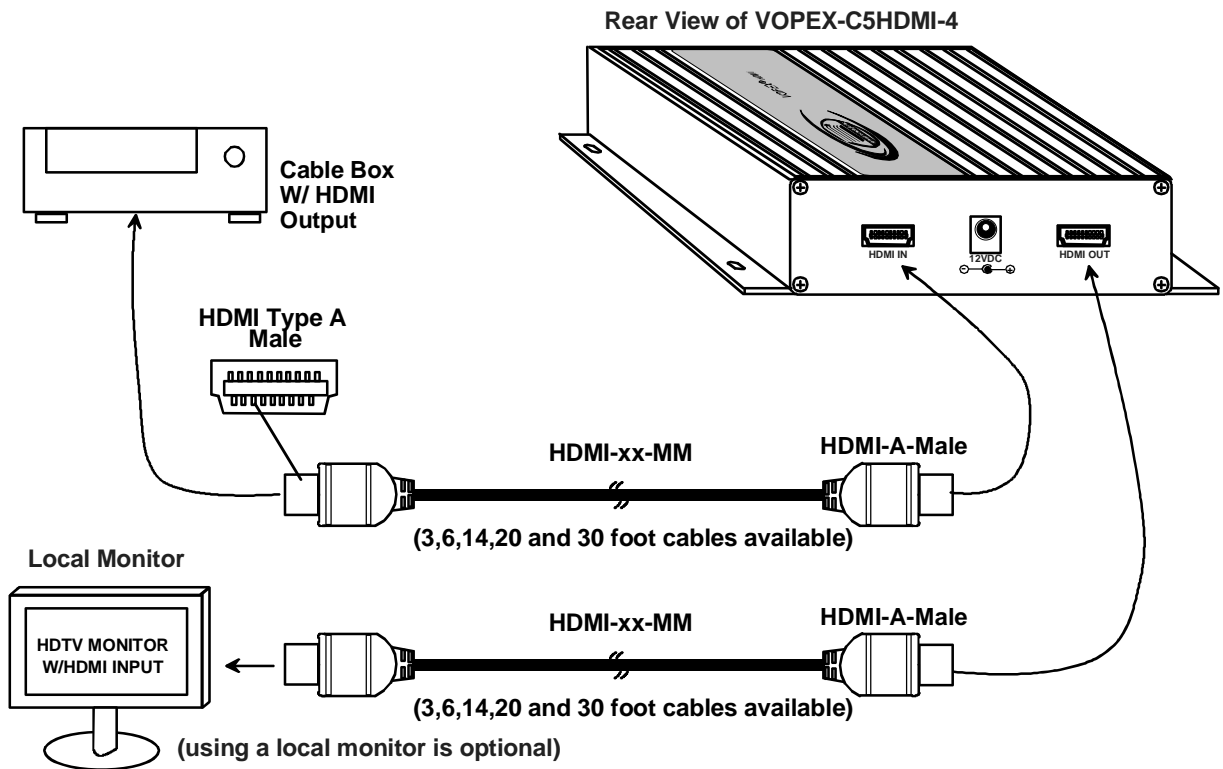
Figure 2- Connect AC adapter

3. Connect an HDMI-xx-MM cable between the "HDMI OUT" port on a Remote Unit and a display with an HDMI input.



**Figure 3- Connect the remote unit to a display**

4. Connect an HDMI-xx-MM cable between the "HDMI IN" port on the VOPEX and an HDMI video source. Connect another HDMI-xx-MM cable between the "HDMI OUT" port on the VOPEX and a display with an HDMI input (optional).



**Figure 4- Connect the VOPEX to a video source and local monitor**

5. Power ON the display first, then the video source.

## DAISY-CHAINING

The VOPEX-C5HDMI-4 can connect to up to 4 remote units, and those remote units can be single-monitor units such as ST-C5HDMI-RD3, single-monitor daisy-chain compatible units (ST-C5HDMI-RD-150), or 3-monitor daisy-chain compatible units (ST-C5HDMI-RD3-150).

The NTI ST-C5HDMI-RD-150 and ST-C5HDMI-RD3-150 can be daisy-chained in a configuration to include up to 5 remotes at 1080p / or up to eight remotes at 1080i/720p. The image below demonstrates a daisy-chain configuration with 3 remotes.

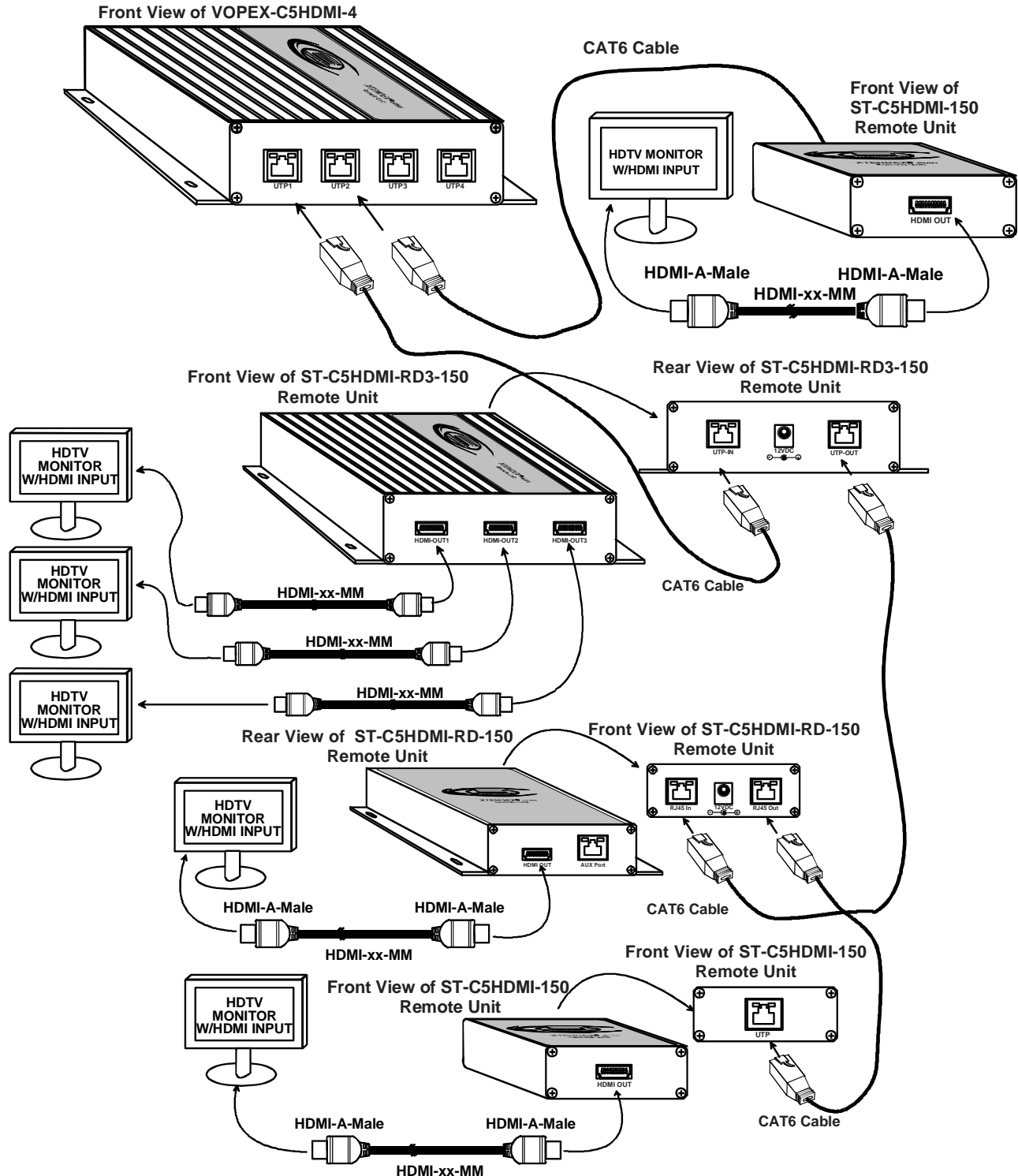


Figure 5- Daisy-chained Remote Units

## 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 as per the table and drawing below.

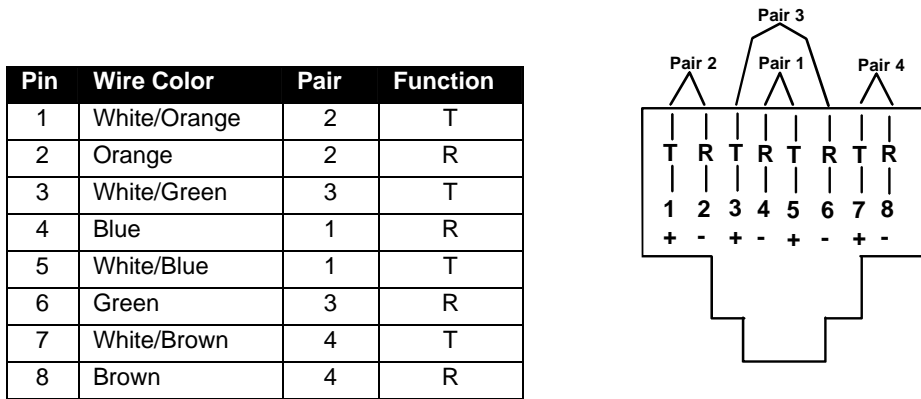


Figure 6- View looking into RJ45 female

## LED INDICATIONS

The two LED's on the RJ45 connectors of the components in this manual have the following meaning:

**VOPEX:** All ports: Right = Power ON,  
 Left: Flashing = Waiting for receiver ready;  
 Solid = Receiver is attached to the port, EDID is validated, HDCP is active and working

**ST-C5HDMI-150 Receiver:** Right = Power ON,  
 Left = Receiving HDMI signals

**ST-C5HDMI-RD-150 Receiver:**  
 "RJ45-In" (Left): Left = Power ON,  
 Right: Flashing = Waiting for the display ready;  
 Solid = Display is attached, EDID is validated, HDCP is active and working.

"RJ45-Out" (Right): Left = Receiving the HDMI signal from transmitter;  
 Right: Flashing = Waiting for the downstream receiver on the UTP port ready;  
 Solid = downstream receiver is attached to the ST-C5HDMI-RD-150, EDID is validated, HDCP is active and working

**ST-C5HDMI-RD3-150 Receiver:**  
 "RJ45-In" (Left): Left = Power ON,  
 Right: Flashing = Waiting for any display on the HDMI port ready;  
 Solid = At least one display is ready on the three HDMI ports, EDID is validated, HDCP is active and working.

"RJ45-Out" (Right): Left = Receiving the HDMI signal from transmitter;  
 Right: Flashing = Waiting for the downstream receiver on the UTP port ready;  
 Solid = Downstream receiver is attached to the ST-C5HDMI-RD3-150, EDID is validated, HDCP is active and working

## TECHNICAL SPECIFICATIONS

Video bandwidth	4.8Gbps
Maximum Resolution	1080p/1920x1200 (Maximum distance- 150 feet)
HDMI Connector	Type A 19-pin female
Link Connector	RJ45 female
Signal Type	HDMI 1.2, HDCP 1.1 compliant
Cable required	CAT6 UTP solid 550 MHz or better cable with TIA/EIA-568B wiring terminated with standard RJ45 connectors is recommended for 1080p applications
Operating temperature	5°F to 122°F (-15°C to 50°C)
Storage Temperature	40°F to 185°F (-40°C to 85°C)
Storage Humidity	0% RH to 80% RH, non condensing
Operating Humidity	0% RH to 90% RH, non condensing
Power Supply	110 or 220 VAC at 50 or 60 Hz-12VDC\ 3A via AC adapter (included). Remote unit: powered from VOPEX via CAT6 solid UTP cable.
Size (In.) WxDxH VOPEX ST-C5HDMI-150 ST-C5HDMI-RD-150 ST-C5HDMI-RD3-150	5x4.7x1.4 2.5x2.8x0.9 (local and remote unit) 3.9x3.2x1.4 5x4.7x1.4
Approvals	RoHS, CE, FCC

## TROUBLESHOOTING

Each and every piece of every product sold 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 information below to see if it can answer any questions that arise. If the answer is not found, please contact us directly for help at 1-800-742-8324 (800-RGB-TECH) in US & Canada or 1-330-562-7070 worldwide. We will be happy to assist in any way we can.

Problem	Cause	Solution
<b>No Video</b>	<ul style="list-style-type: none"> <li>Video Cable not connect properly</li> <li>No Power</li> <li>Monitor connected after video source was powered-ON</li> </ul>	<ul style="list-style-type: none"> <li>Check all cable connections</li> <li>Check power supplies. Power LEDs should be illuminated</li> <li>Power-cycle video source</li> </ul>
<b>Picture blanks out sometimes</b>	Loss of sync between source and display	Try lowering resolution setting. If this helps, the CAT cables being used are insufficient for the resolution setting. Maximum resolution is 1080p/1920x1200 at 150 feet.

## 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.

**PRODUCT: VOPEX-C5HDMI-4**

**SERIAL NO.:** \_\_\_\_\_

**DATE:** \_\_\_\_\_ **INSPECTED BY:** \_\_\_\_\_