VIP-T400
4K60 HDMI and USB over IP Fiber/CAT
WITH WALLPLATE ENCODER
USER MANUAL

Contents

TAA
COMPLIANT

What's in the box:

The VIP-T400-E, VIP-T400-E-WP, and VIP-T400-D are sold separately.

- VIP-T400-E
    - o VIP-T400-E Transmitter/Encoder
    - o 1x 12 VDC Power Adapter
    - o 1x Mounting brackets

- VIP-T400-E-WP
    - o VIP-T400-E Transmitter/Encoder
    - o Mini phoenix connectors for optional 12VDC input, and RS-232

- VIP-T400-D
    - o 1 VIP-T400-D Receiver/Decoder
    - o 1x 12 VDC Power Adapter
    - o 1x Mounting brackets

Optional Accessories

VIP-T400-RACK2: allows mounting of up to two of VIP-T400-E and/or VIP-T400-D in a 1U rack space

RPS-1218 – 18 channel, 12 VDC rack mount power supply, typically used when the product is configured with fiber transport.

iCON™ EZControl™: Universal Control Automation system

VPX – Video Over IP Management Software with Automation

VPX Wallmaster plugin for VPX

VPX Commander: 1U Rack mount host appliance for VPX Management Software

VIP-NET Media Hub: purpose built for video over ip network switches

Product Description

The **VIP-T400** 4K60 HDMI & USB/KM Over IP Distribution System provides UltraHD/4K video, audio, RS-232, IR, and USB signal transport over IP networks. The VIP-T400 can be used as a point-to-point extension system supporting distances up to 300 meters, as well as layered distribution, switching, and matrix switching systems using multiple control options including PureLink's VPX IP Video Management Software, and PureLink's iCON™ EZControl™. The VIP-T400 API allows control programming and diagnostics for other third-party control platforms as well, and is design to be easy to implement. The VIP-T400 system is easily capable of providing large source and display matrix switching.

- TAA Compliant
- Input video support; HDMI 2.0 with HDR10+, and Dolby Vision
  - 4K60 4:4:4
  - 4K60 4:2:0
  - 4K30 4:4:4
  - 1080P60
  - 1080P30
  - 1080P24
  - 720P60
  - 720P30
- Input audio support
  - HDMI input
    - Typical HDMI 2.0 audio formats
    - Dolby TrueHD
    - DTS-HD Master
    - LPCM Audio
    - Up to 7.1 channels 192 KHz
  - Analog stereo input
- HDCP support
  - HDCP 1.4 and 2.2 input
  - HDCP 1.4 output with HDCP 2.2 inputs (supports legacy 4K HDMI 1.4 displays)
- Data rate
  - 50-850 Mbps range, dependent on incoming video signal
  - Installer settable variable rate throttle option
- Latency
  - Ultra-low latency (<17mS)
- Distance
  - Max. 150M using CAT6a
  - SFP Multi mode
  - SFP Single mode
- Product Dimensions
  - WxDxH: 8.125 in x 5.5 in x 1 in (20.5 cm x 14 cm x 2.54 cm)
- WallPlate Dimensions
  - WxDxH: 4in x 3.94in x1.61 in (104mm x 100mm x 41mm)

Front Panel VIP-T400-E   ENCODER (transmitter)
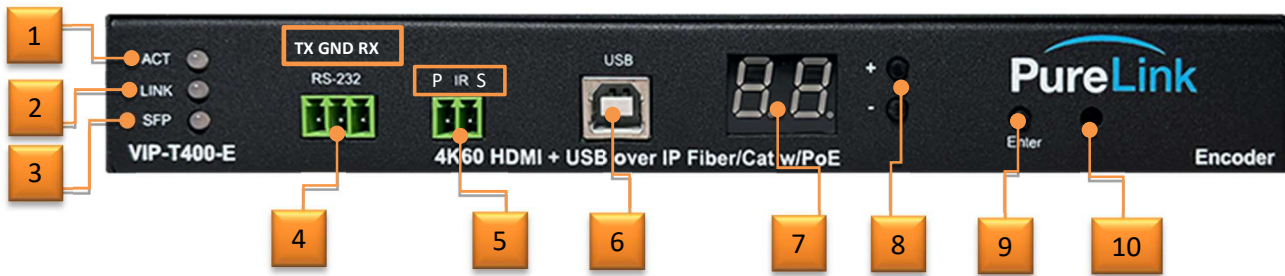
1. ACT LED:
   - Turns green whenever 4K HDMI & USB over IP Extender is powered
2. LINK LED
   a. On   Encoder is linked to at least one Decoder with video signal
   b. Flashes   Encoder is linked to at least one Decoder with no video signal
   c. Off   Encoder is not linked to any Decoder
3. SFP LED
   - Flickers green when network connection is waiting for a video source, turns solid green when network connection and video source are properly functioning
4. RS-232
   - DB9 Connector for RS-232 remote extension (TX/GND/RX)
5. IR Port
   - IR extension cable to IR port and position the emitters near the device(s) you want to control (Power/Signal)
6. KM USB Port/Host
   - Connect to a laptop or similar device
7. Display
8. Channel Select
9. Enter
   - Enter the selected number for Group channel
10. Reset Button
    - Restart the device by pressing the RESET button

Rear Panel VIP-T400-E ENCODER (transmitter)
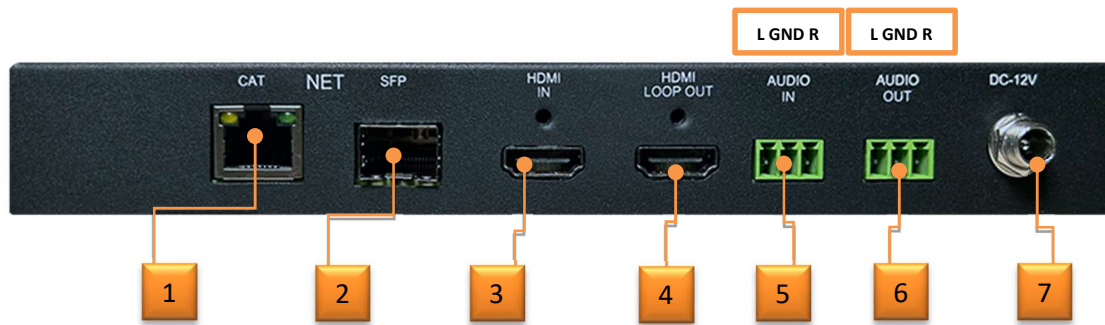
1. RJ45 Connector
   o Ethernet interface
2. 1G SFP Fiber Slot: Multi Mode or Single Mode compatible, modules sold separately
3. HDMI IN
4. HDMI LOOP OUT
5. Stereo Input (unbalanced)
   a. Can be embedded on to the output stream signal via control commands
6. Stereo Output (Unbalanced)
   a. Can extract the audio from the HDMI input (PCM)
   b. Can output from the audio input of a single connected Decoder, when both encoder and decoder are in Unicast mode only
7. 12V DC Input: typically used when fiber transport is utilized. (RPS-1218 power system recommended)

Front Panel VIP-T400-D DECODER (receiver)

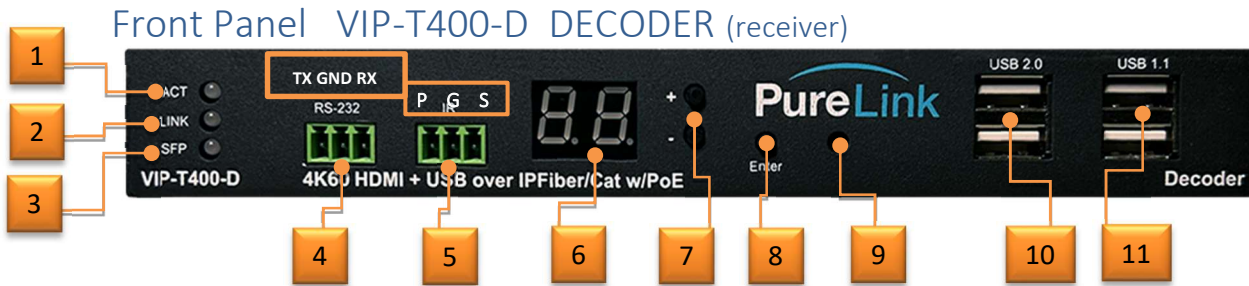1. ACT LED:
   a. Turns green whenever 4K HDMI & USB over IP Extender is powered
2. LINK LED
   a. On   Encoder is linked to at least one Decoder with video signal
   b. Flashes   Encoder is linked to at least one Decoder with no video signal
   c. Off   Encoder is not linked to any Decoder
3. SFP LED
   a. Flickers green when network connection is waiting for a video source, turns solid green when network connection and video source are properly functioning
4. RS-232
   o DB9 Connector for RS-232 remote extension (Power/Ground/Signal)
5. IR Port
   o IR extension cable to IR port and position the emitters near the device(s) you want to control
6. Display
7. Channel Select
8. Enter
   o Enter the selected number for Group channel
9. Reset Button
   o Restart the device by pressing the RESET button
10. USB 2.0
    o Can be connected with USB mouse, USB keyboard and USB pen drive. It can also connect to USB2.0 Camera to return recording video to transmitter under unicast mode
11. USB 1.1
    o USB1.1 Port can be connected with USB mouse, USB keyboard and USB pen drive
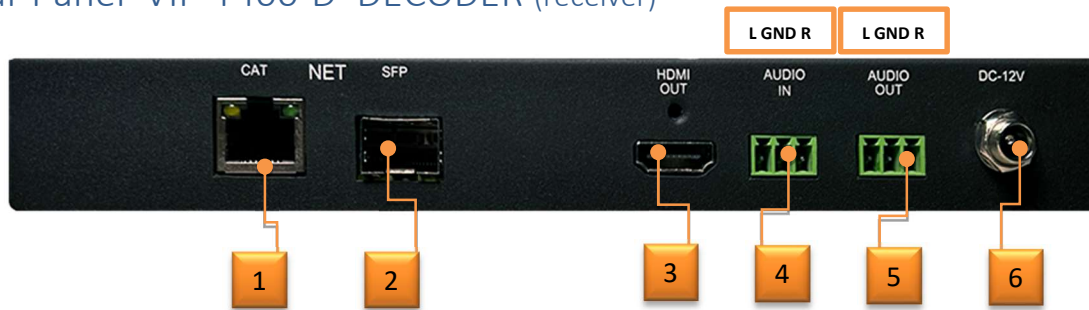
Rear Panel VIP-T400-D DECODER (receiver)

1. RJ45 Connector
   o Ethernet interface
2. 1G SFP Fiber Port: Multi Mode or Single Mode compatible, modules sold separately
3. HDMI OUT
4. Stereo Input (unbalanced)
   a. Can be embedded on to the output stream signal
5. Stereo Output (Unbalanced) *Unicast mode only
   a. Can extract the audio from the HDMI input (PCM)
   b. Can output from the audio input of a single connected Decoder, both in Unicast mode only
6. 12V DC Input

Front Panel VIP-T400-E-WP   WALLPLATE ENCODER (transmitter)
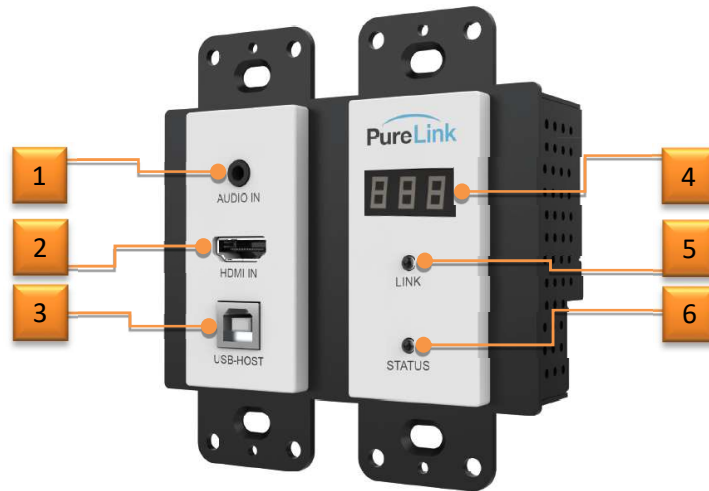
1. Audio Insert
   o Can be either auto insert or force insert
2. HDMI IN
3. USB Host
4. Channel Display: indicates broadcast channel
5. Link LED
   a. On   Encoder is linked to at least one Decoder with video signal
   b. Flashes   Encoder is linked to at least one Decoder with no video signal
   c. Off   Encoder is not linked to any Decoder
6. Power Status LED
   a. Solid on when Encoder is powered either by PoE or local power adapter (optional)

Rear Panel VIP-T400-E-WP   WALLPLATE ENCODER (transmitter)
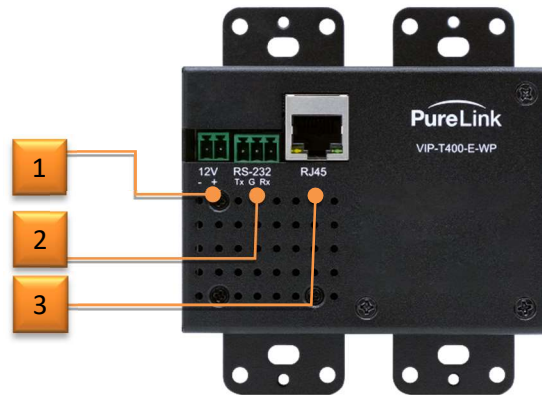
1. 12 VDC Power Input (optional). Encoder can run from PoE
2. RS-232
7. RJ45 Connector
   o   Ethernet interface

Available Functions when connected over a Network

In addition video, audio, USB, IR and RS232 transport over networks, the VIP-T400 provides network access to the following functions:

- Built in web server for access to

- API

Built in web server

The built-in web server provides the following functionality

- Informational
    - o Firmware version
    - o State of operation
    - o Detailed diagnostics via API commands
- Settings
    - o EDID
    - o Data Rate (encoder)
    - o Scaler output (decoder)
    - o IP settings
    - o Multicast/Unicast mode

API

The VIP-T400 employs a rich API, allowing settings, and diagnostics via the network. Please reference the separate VIP-T400 API Command Reference for further information.

Building your AV over IP Solution:

Extension - Point to Point

To use the VIP-T400 as a point-to-point system, there is no need for a network, you can directly connect the ENCODER and DECODER by CAT or Fiber to create an extender solution. This configuration will work out of the box. The Encoder and Decoder only need to be set to the same channel number to connect.

It is possible to create a point-to-point extender solution over a network as well, which gains the features and advantage of communicating with the endpoints through the API commands, to gather valuable data, and change settings.

Distribution (One ENCODER to more than one DECODER)

Connecting a VIP-T400 ENCODER to multiple DECODERS, you will need a compatible network switch to connect them together. Since this configuration is for distribution, it is not necessary to have control of the endpoints as the decoders are all set to look at the same encoder. However, as the endpoints are on the network, you will gain the advantage of access to their web interfaces, and control and diagnostics of the Encoder and Decoders using the API or employing PureLink's iCON™ EZControl™ or VPX Management software.

Switching (More than one ENCODER to one DECODER)

Connecting more than one VIP-T400 ENCODERS to one DECODER, you will need a compatible network switch to connect them together. Since this configuration is for many to one switching, it is necessary to have control of the decoder to set which encoder it is connected to. PureLink's iCON™ EZControl™ and VPX Management software provide the necessary functionality and beyond. The VIP-T400 API is also available for making setting changes or gathering diagnostic data when the endpoints are on a network. Note that the encoders channel setting should only be set during installation, and not changed again once the system is in operation.

Matrix (More than one ENCODER to more than one DECODER)

Connecting a VIP-T400 ENCODER to multiple DECODERS, you need a compatible network switch to connect them together. Since this configuration is for matrix switching, it is necessary to have control of the decoders and encoders. PureLink's iCON™ EZControl™ and VPX Management software provide the necessary functionality and beyond. The VIP-T400 API is also available for making setting changes or gathering diagnostic data when the endpoints are on a network. Note that the encoders channel setting should only be set during installation, and not changed again once the system is in operation.

Connecting to the VIP-T400 over the Network

Default IP Address

The VIP-T400 encoders and decoders are set from the factory with static IP addresses in the 169.254.nnn.nnn range.

How to check the IP Address of a Decoder

Option 1: Via connection to a Display

When connected a display, the Decoder will display the 'Local IP' in the lower right corner of the splashscreen.

Option 2: Advanced Port Scanner

A utility program such as Advanced Port Scanner can detect and report all Decoders (and also all Encoders) on the network. Use Advance Port Scanner to look in the 169.254.0.1 <> 169.254.255.254 range.

How to check the IP Address of an Encoder

Option 1: Via connection to a Decoder

When connected by CAT or Fiber cable to a VIP-T400 Decoder, and the Encoder and Decoder are set to the same Channel and no video input present at the Encoder, the VIP-T400 Decoder will display the 'Remote IP' in the lower right corner of the splashscreen.

Option 2: Via another VIP-T400 endpoint with known address

Using the VIP endpoint with known IP address: enter the IP address in to a browser. In the Utilities section>Console API Commands field, enter *node_list* and press apply. The Output window will show all VIP-T400 endpoints on the system.
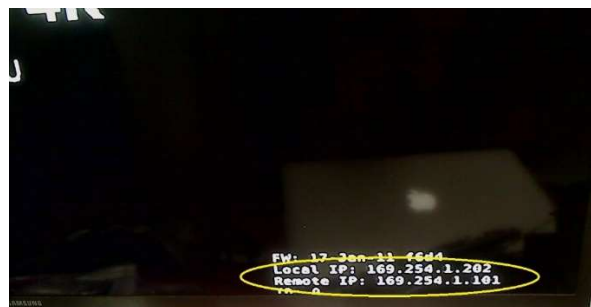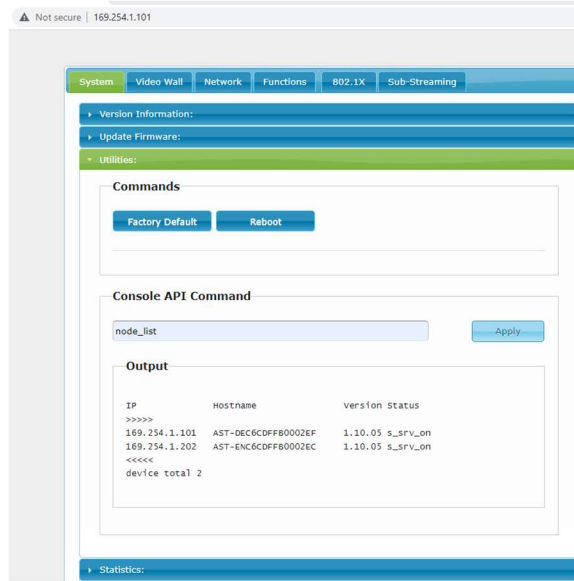

Option 3: Advance IP Scanner

A utility program such as Advanced Port Scanner can detect and report all Encoders (and also all Decoders) on the network. Use Advance Port Scanner to look in the 169.254.0.1 <> 169.254.255.254 range.

How to find all IP Addresses of a VIP-T400 system

Option 1: Using a VIP-T400 endpoint with known IP Address:

Using the VIP endpoint with known IP address: enter the IP address in to a browser. In the Utilities section>Console API Commands field, enter *node_list* and press apply. The Output window will show all VIP-T400 endpoints on the system.

Option 2: Using VPX Management Software

VPX Management software allows for automatic detection of all VIP-T400 devices on the network, as long as the software is on a Windows computer or VPX Commander that is in the same subnet.
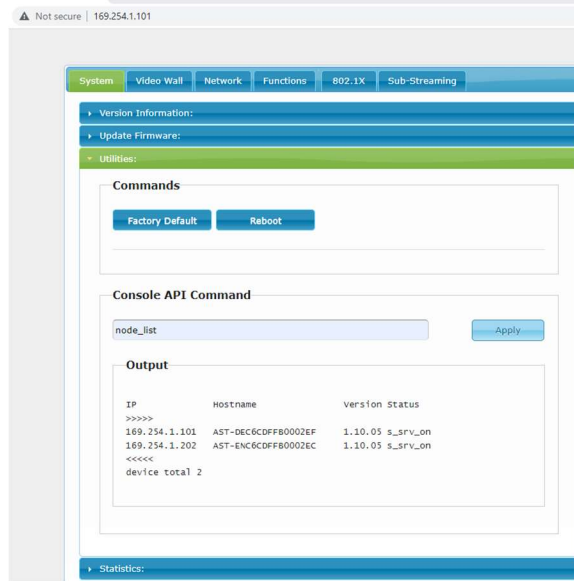
A utility program such as Advanced Port Scanner can detect and report all Decoders and Encoders on the network. Use Advance Port Scanner to look in the 169.254.0.1 <> 169.254.255.254 range.

Windows 8.1 and Windows 10 Computer LAN Port Setup

Opening Network Page

Option 1: Right Click on the taskbar icon that looks like a signal strength indicator. Then click on "Open Network and Sharing Center".
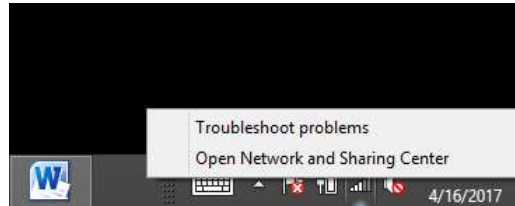
Option 2: Use the search window and type "Network and Sharing Center". When the search function provides choices below, select Network and Sharing Center.
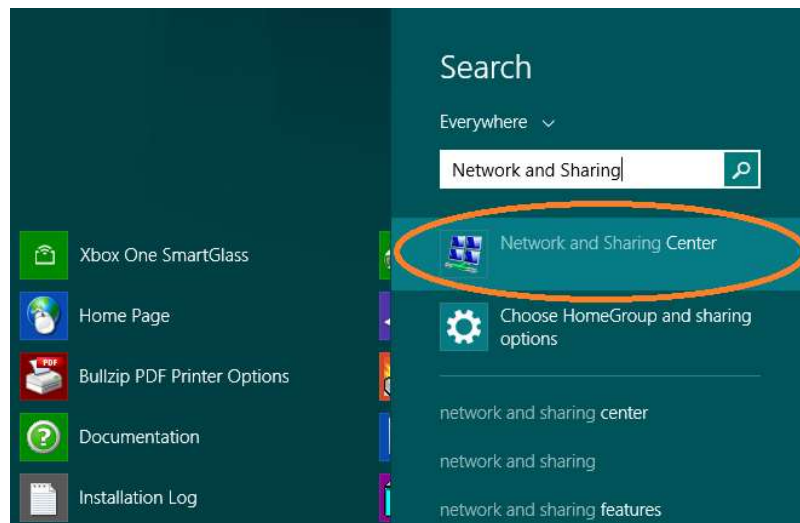
The next page will be as shown below. Select the "Change Adapter Settings".
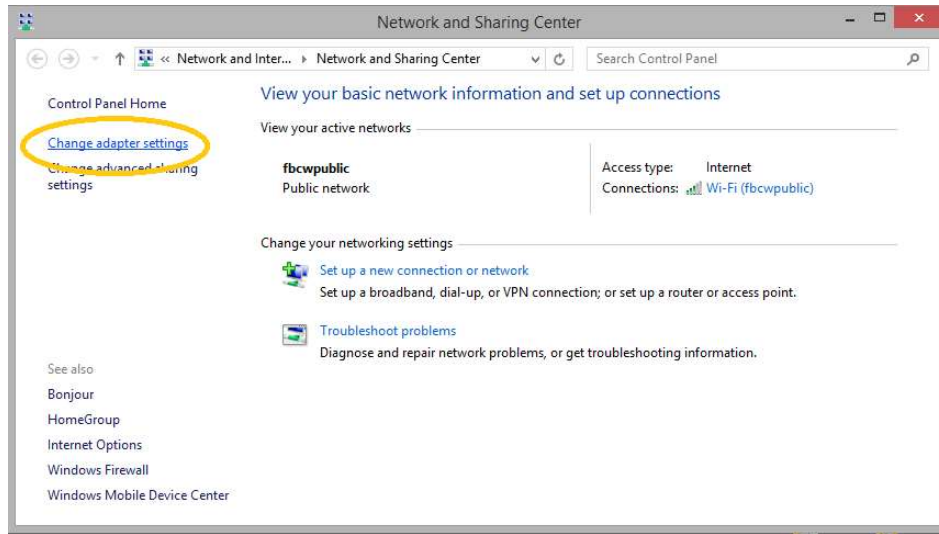
When you are in the Change Adapter Settings page as shown below, select the LAN adapter that you will use to communicate with the VIP-T400system.
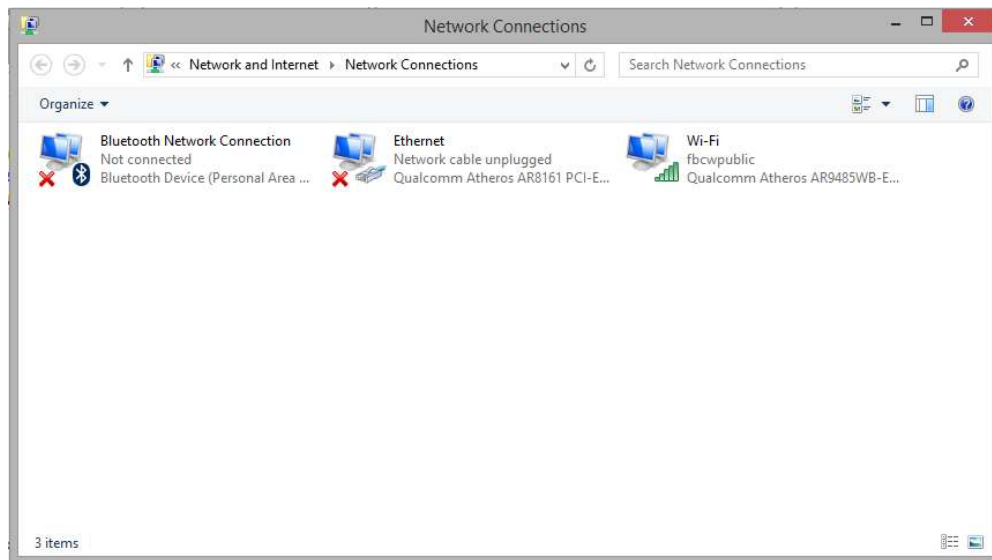
For this example, we will select the middle listing, Qualcomm Atheros LAN Adapter. Double click on the listing. The properties page will open as shown below.
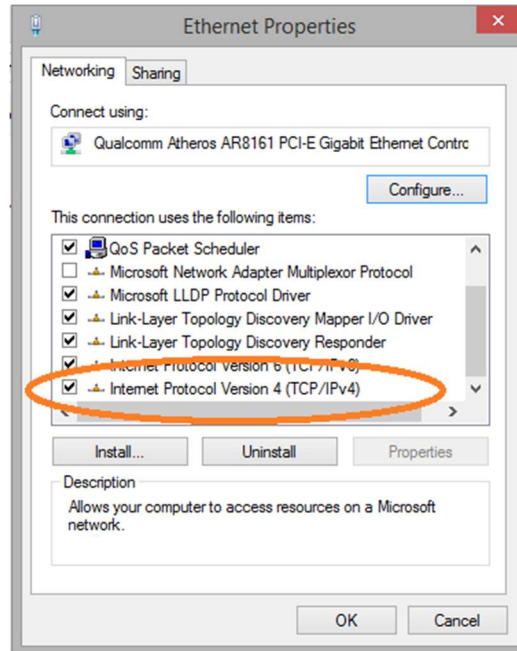
Select "Internet Protocol Version 4 (TCP/IPv4)" by double click on the text.

Note: Do not deselect the checkbox or change the selections of any other properties in the menu.

When the window changes to the Properties page for the Internet Protocol Version 4, enter the same IP subnet as the VIP-T400system. (*VIP-T400 default address is 169.254.nnn.nnn*)
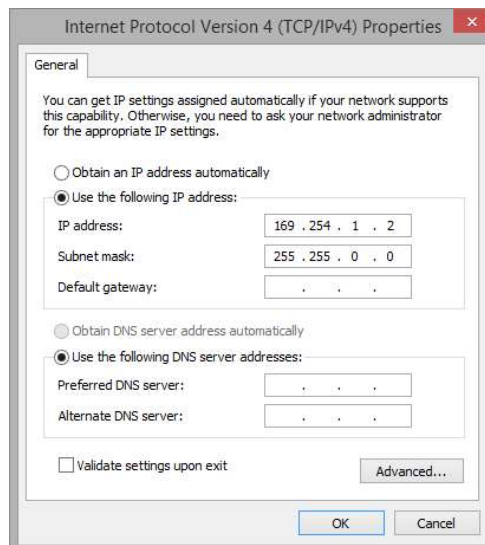
Setting up your Mac computer to communicate on the same subnet

Opening Network Page

From the top menu bar, you can either click on the network symbol
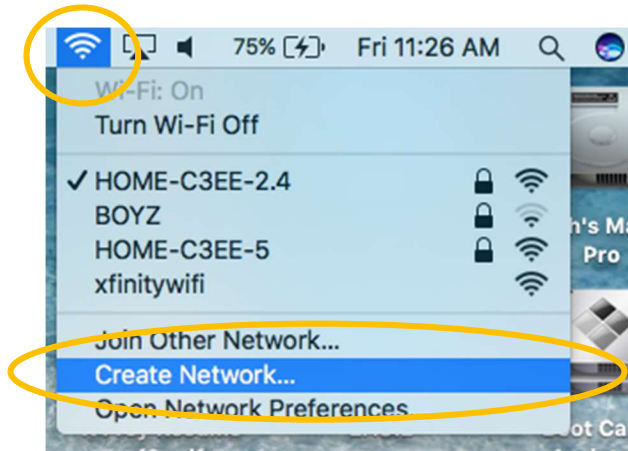
Or click on the Apple icon in the upper left, and the select system preferences:
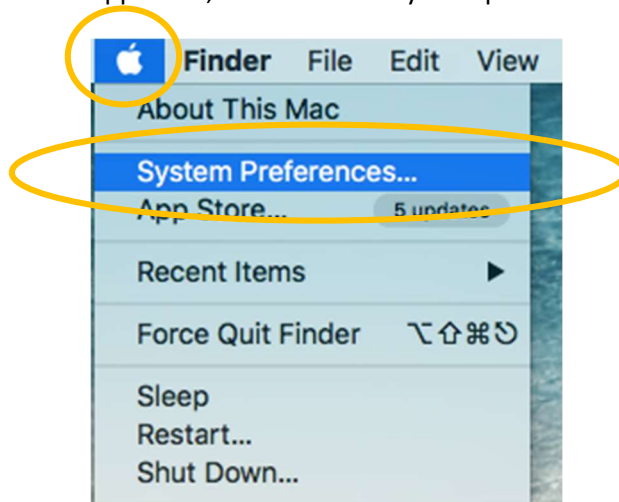
Then select Network:
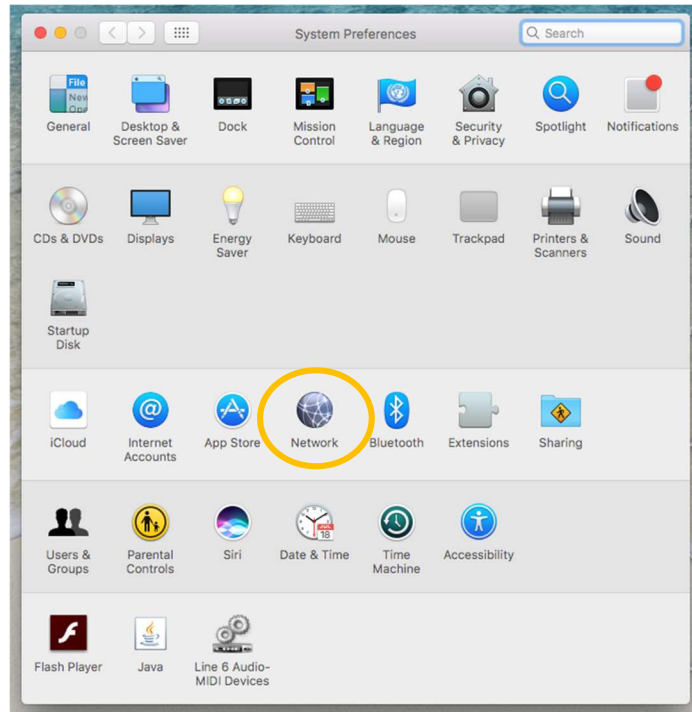
Select the appropriate network adapter from the list in the left pane, and then set the correct IP subnet parameters.

Network switch requirements

The VIP-T400 is compatible with all PureLink network switches from PureLink, as well as many brands and models that support IGMP Snooping V2 and Jumbo Frame. We recommend the PureLink switch line as they are AV over IP purpose built and ready for use out of the box in closed systems. The PureLink line of network switches are all either L2+ or L3 switches depending on the model, and support CAT and Fiber transport.

You may use the VIP-T400 AV over IP system with other network switches that comply with the minimum requirements.

The minimum requirements of a network switch for the VIP-T400 are:

- 1G BaseT Port speeds
- Backplane data rate performance that exceeds the total data rate of your system
- IGMP Snooping V2, and IGMP Querier
- Jumbo Frame of 8K or greater

Network switch recommendations

It is also recommended from a system design standpoint that you consider VLAN management to isolate the multicast traffic generated by the Encoders from devices other than the Decoders.

Bandwidth Usage and Latency

The VIP-T400 Encoders use the JPEG2000 codec. Depending on the content and signal types being encoded, the VIP-T400 will output between 200 – 850 Mbps.

Latency is typically ~17 milliseconds.

Installation

The VIP-T400-E / VIP-T400-D can be rack mounted, or tab mounted using the included tabs. Rack plates are optional accessories for purchase, model number VIP-T400-RACK2.

The VIP-T400-E-WP fits within a standard US two gang box.

Connections

Power

Each VIP-T400 can be powered by PoE 802.3af via the RJ45 port, or from the included AC to 12Vdc power adapter.

When multiple VIP-T400s are present in a rack system, and are connected by fiber, or PoE is not an option, we recommend our RPS-1218, eighteen channel 12VDC UL listed power supply.

Network

The VIP-T400 supports standard category RJ45 connectivity, and can require 1G port speed per device. It is recommended to use CAT6a cabling to ensure the best performance. CAT5e will satisfy bandwidth requirements.

The VIP-T400 is set to a static default IP method, within the 169.254.nnn.nnn, 255.255.0.0 subnet.

Audio

The VIP-T400 provides HDMI audio transport, and provides insert analog audio on the ENCODER, and extraction analog audio on the DECODER.

Using the layered switching feature of the VIP-T400 (Free Routing),you can break away the HDMI or analog audio and route it separately from the video, USB, IR, and RS232 layers to other receivers. Free Routing is disabled as factory default. Please see the API Reference for commands to enable Free Routing. Note that ALL devices in a system must be enabled. Free Routing splits the five signal types in to different streams. Your network switch will have more packets to manage per device in this case.

Video

The VIP-T400 provides HDMI video / audio / IR / USB / RS232 transport. Using the layered switching feature of the VIP-T400, you can break away the HDMI video and route it separately from the audio, USB, IR, and RS232 layers to other receivers. This feature is called Free Routing and can be enabled using the API commands.

Infrared

The VIP-T400 provides IR transport. Using the layered switching feature of the VIP-T400, you can break away the IR and route it separately from the audio, video, USB, and RS232 layers to other receivers.

RS232

The VIP-T400 provides RS-232 transport. There are a few types of RS-232 transport available:

Passthrough – follow video

RS-232 connections default to a follow video mode.

Passthrough – breakaway / layered switching

Using the layered switching feature (Free Routing) of the VIP-T400, you can break away the RS-232 and route it separately from the audio, video, USB, and IR layers.

Network API to RS-232

In addition, the VIP-T400 provides API control of the RS232 ports, allowing send/receive commands to 3rd party devices. This very valuable feature uses network commands to implement control of sources and displays, or other devices.

Diagnostic LEDs

Panel LED	Status	VIP-T400	
Power Red LED	On	Operational	
	Flash Slowly	Booting	
Link Green LED	On	Connected & video is streaming	
	Flash	Connecting, or no source input from transmitter	

RJ45 LEDs (Rear Panel)

RJ45 LEDs	Status	Description
LINK Green LED	On	Ethernet connected
ACT Orange LED	Flash	Data transmission

RJ45 cable pin information (TIA/EIA-568-B)

1. Orange-white	Data 1 +	5. Blue-white	Data 3 -
2. Orange	Data 1 -	6. Green	Data 2 -
3. Green-white	Data 2 +	7. Brown-white	Data 4 +
4. Blue	Data 3 +	8. Brown	Data 4 –

Front Panel Button and Display Functionality

To change Channel on Encoder

- Press and hold the up/down buttons together for 5 seconds until the 2-digit LED display shows CFN. (configuration).
- Press down button to display the current channel.
- Press and hold the up/down buttons together for 5 seconds until the 2-digit LED flashes
- Press the up or down button to change the channel (0 <> 999)
- Press and hold the up/down buttons together for 5 seconds until the 2-digit LED stops flashing

Note: Encoders channels must be unique from each other. Once Encoder channels are set during installation, we recommend they are not changed again if possible, to avoid conflicts or control system errors.

To change Channel on Decoder

- Press the up or down button to change the channel (0 <> 999)

Reset to Factory defaults

After confirming VIP-T400 endpoint is powered up, press and hold the recessed Reset button until the Power and Link LED flash at the same time, then release the Reset button.

Warranty

PureLink Five (5) Year Limited Warranty for PureStreamTM Branded Products Only

Dtrovision, LLC. (hereinafter "PureLink") warrants its HDTools and PureStreamTM branded products (hereinafter "Product") purchased directly from PureLink or Dealer shall be free from defects in workmanship and materials, under normal use and service, for a period of five (5) years on parts and five (5) years on labor. Any repaired or replaced equipment related to Product shall be covered only under the remaining portion of the warranty. This warranty has no relationship to and exists independently of any warranty offered by Dealer. This warranty is a limited warranty and gives you specific legal rights. You may also have other rights which vary from state to state.

TERMS & CONDITIONS

PureLink shall repair or replace the Product if it develops a material fault during the period of warranty, on condition that i) the Product has only been subject to normal use in a domestic or commercial environment in a manner consistent with its specification and functionality, ii) the Product has been cared for reasonably and only subjected to reasonable wear and tear, iii)

the defect has not been caused by willful or negligent abuse or neglect, or any accident or improper installation procedure, iv) the serial number of the Product has not been altered or removed. This warranty only applies to the original purchaser, and shall be the exclusive remedy to the original purchaser. PureLink shall not be liable for any damages whatsoever caused by Product or the failure of Product to perform, including incidental or consequential damages. PureLink shall not be liable for any claim made by a third party or made by the purchaser for a third party. Except as expressly set forth in this warranty, PureLink makes no other warranties, expressed or implied, including any implied warranties of merchantability and fitness for a particular purpose. PureLink expressly disclaims all warranties not satisfied in this

limited warranty. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

WARRANTY RETURNS/REPAIRS/EXCHANGES

No merchandise may be returned without prior authorization from PureLink, and a Return Materials Authorization (RMA) number. Failure to comply with these conditions will result in rejection of the returned merchandise. Any warranty service on Products must be arranged through Dealer. Authorized returns must be shipped freight prepaid and fully insured to PureLink, Fair Lawn, NJ USA, with the RMA number clearly marked on the outside of all shipping boxes and containers. PureLink reserves the right at its sole discretion to refuse any shipments arriving freight collect or without an RMA number. Any authorized returned merchandise must be accompanied by a note describing the reason for return, along with contact information including name, phone number, return mailing and shipping addresses, e-mail address, and RMA number. On any products returned and accepted with an RMA number, return freight charges following repair of items under warranty shall be paid by PureLink, shipping by the standard ground carrier of its choice.

ADVANCE WARRANTY REPLACEMENTS

PureLink's advance replacement service offers a Replacement Unit upon request - free of charge for eligible products purchased less than one (1) year of the warranty claim. Products purchased more than one (1) year prior to the warranty claim do not qualify for advance replacement services. Advance replacement requests must be validated by a member of PureLink's Technical Support Team. Replacement units may be new or refurbished and are subject to availability. PureLink is responsible for shipping the Replacement Unit to your designated location by standard ground service. All other shipping methods will be the responsibility of the Dealer. Original Unit Return – the Original Unit must be returned within thirty (30) calendar days of the return authorization date. Failure to return the Original Unit within this period will be subject to a minimum 15% re-stocking fee. Dealer is solely responsible for the shipping of the Original Unit to PureLink

TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly notify PureLink within the warranty periods described above by calling PureLink's Technical Support Department at 1-201-488-3232. PureLink, in its sole discretion, will determine what action, if any, is required under this warranty. Most problems can be corrected over the phone through close cooperation between Customer and a PureLink technician. To better enable PureLink to address a warranty claim, please have the Product's serial and model numbers. If PureLink, in its sole discretion, determines that an on-site visit or other remedial action is necessary, PureLink may send a representative to Customer's site.

CUSTOMER SERVICE

Technical support inquiries can be submitted electronically through the PureLink website at www.purelinkav.com. For immediate assistance please contact PureLink's Customer Care Team at +1 (201) 488-3232