VIP-300H

UHD/4K & USB OVER IP TX/RX

USER MANUAL

PureLink™
535 East Crescent Avenue
Ramsey, NJ 07446 USA
Tel: +1.201.488.3232
Fax: +1.201.621.6118
E-mail: sales@purelinkav.com

For order support, please contact your local dealer.
For technical support, please contact us at support@purelinkav.com.

TABLE OF CONTENTS

What's in the box 4

VIP300H-U TX Transmitter / Encoder 4

VIP300H-U RX Receiver / Decoder 4

Product Description 4

Specifications 4

Front Panel 5

Rear Panel 6

Remote Control 9

VPX Control 10

Things to know before you start 11

Setting your computer to communicate with VIP300H-U 12

IP Address and Channel settings 16

Auto IP (factory default setting) 16

DHCP 16

Static 16

Network switch requirements 17

Network switch recommendations 17

Setting up a VIP300H-U system: 18

Point to Point (Extension) 18

Video functions 20

RX Scaler settings 20

Video wall settings 20

Audio functions 21

Embedding audio on the TX 21

Audio outputs on the RX 21

Control functions 21

IR receiver for RX – Channel operations 21

Extending RS232 signals 22

Extending IR signals 22
Extending USB signals 22
Network functions 22
Connecting using Category cable 22
Connecting using fiber cable 22

What's in the box

VIP300H-U TX Transmitter / Encoder

- 1 VIP300H-U Transmitter
- 1 Optional AC to DC power adapter
- 1 IR emitter extender
- 1 IR receiver extender
- 1 pair of optional mounting tabs

VIP300H-U RX Receiver / Decoder

- 1 VIP300H-U Transmitter
- 1 Optional AC to DC power adapter
- 1 IR emitter extender
- 1 IR receiver extender
- 1 pair of optional mounting tabs
- 1 IR remote control

Optional Accessories

- VPX – Matrix and Videowall Management software with Browser UI
- VIP300H-U-TX-RACK2 provides rack mounting of 2 transmitters in a 1RU rack space

Product Description

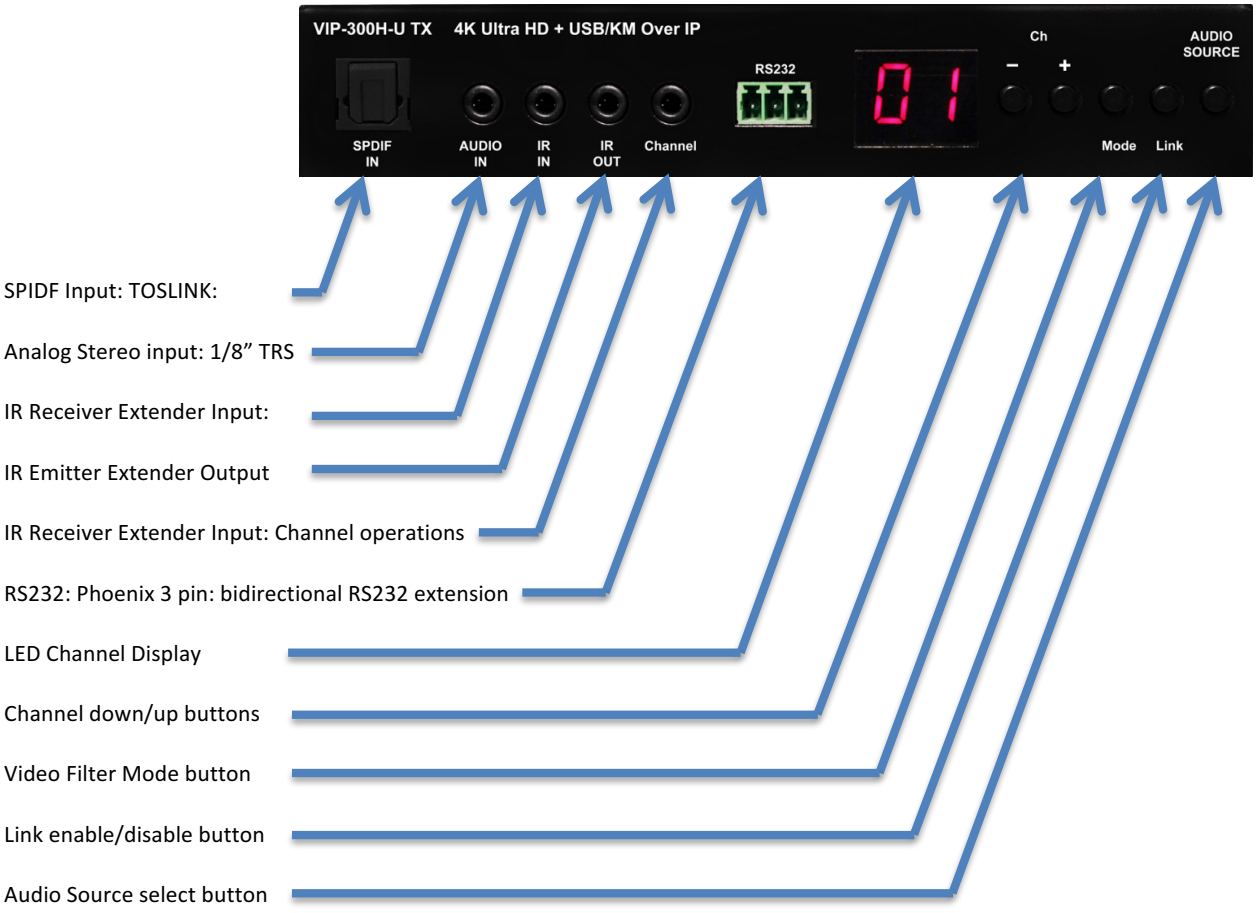
The VIP300H-U product provides input support of 4K60 resolutions and HDCP 2.2. In order to keep the data rate under 1G network switch port speeds with plenty of headroom, the transmitter will output 4K30. The VIP300H-U also supports the common format of 4K30 4:4:4 and 4:2:0, as well as 1080P60 4:4:4. The VIP300H-U's built in scaling engine allows many videowall configurations up to 8x8, as well as image rotation, output resolution lock to 4K30 or 1080P, and more.

Specifications

- Input video support
  - 4K60 4:2:0
  - 4K30 4:4:4
  - 1080P60
  - 1080P30
  - 1080P24
  - 720P60
  - 720P30
- Input audio support
  - HDMI input

    - SPDIF input
    - 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
    - 280 – 320 Mbps median (800 Mbps peak)
    - Installer variable rate throttle option
- Latency
    - Typically 8 milliseconds (max 40 mS)
-

Front Panel - TX (encoder) (transmitter)



Rear Panel - TX (encoder) (transmitter)

SFP slot (option SFP module):

LAN Port with PoE

HDMI input

USB Type B connector

DC power inlet

Front Panel - RX, (decoder) (receiver)

SPIDF Output: TOSLINK:

Analog Stereo Output: 1/8” TRS

IR Receiver Extender Input:

IR Emitter Extender Output

IR Receiver Extender Input: Channel operations

RS232: Phoenix 3 pin: bidirectional RS232 extension

LED Channel Display

Channel down/up buttons

Video Filter Mode button

Link enable/disable button

Audio output select button

Rear Panel – RX (decoder) (receiver)

SFP slot (option SFP module):

LAN Port with PoE

HDMI output

USB Type A connectors

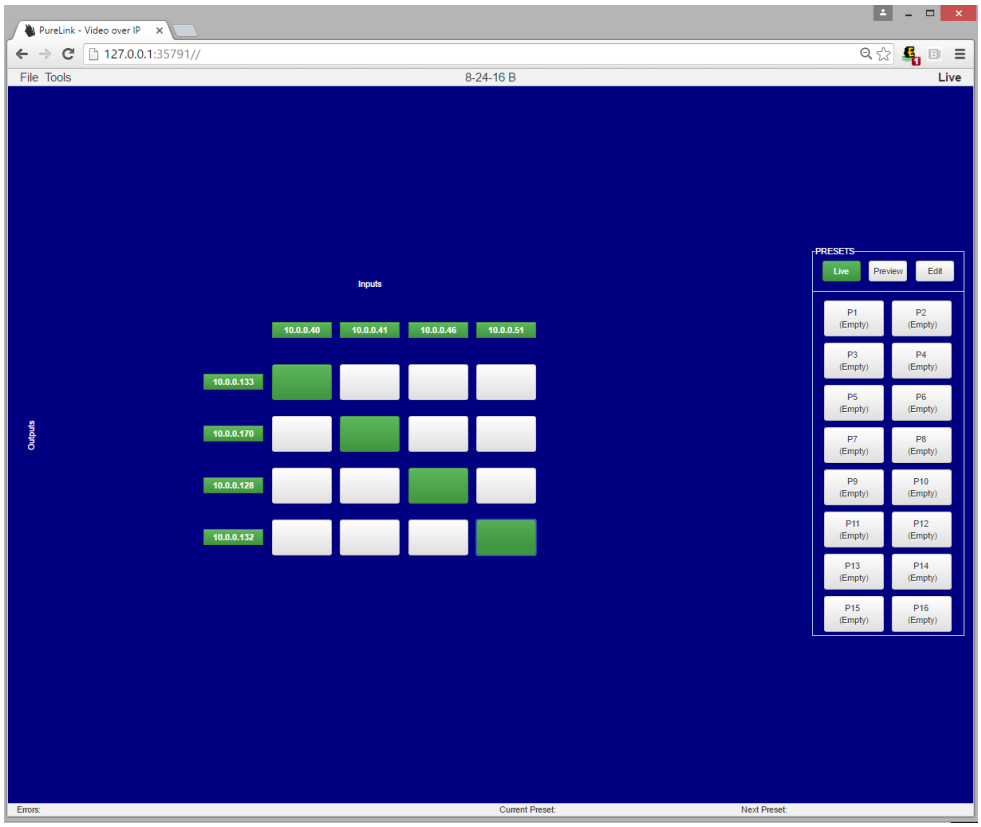
DC power inlet

Remote Control

The infrared remote control supplied with the VIP300H-U RX allows the user to operate the receiver similar to a cable or satellite box. For intuitive and easy operation, selections of transmitters is done like changing channels making operation familiar. Each VIP300H-U Transmitter would be set during installation to an 'output' channel from 00 to 99 (or higher with VPX software). The user can then select what 'channel' (transmitter) they want to watch by using the receivers' remote control. The user can also use the front panel plus/minus buttons to select channels, or use our VPX management software.

VPX Control

VPX IP Video Management software provides the easiest method of device setup/discovery, system setup, and operation. VPX provides a rich set of features. Please visit our website purelinkav.com and search for VPX in the IP Video section to learn more. A reference at the end of this manual is also available.



Things to know before you start

VIP300H-U encoders and decoders are set factory default to assign themselves a unique IP address. This mode is called Auto IP. The encoders and decoders can optionally be set to DHCP mode, or Static mode.

Point to Point (Extension)

When using the VIP300H-U as a point to point extender, no configuration is necessary. Simply plug a transmitter and receiver together with a CAT5e or better cable. We recommend CAT6a to support the maximum distance performance.

Point to Many (Distribution)

When using the VIP300H-U product as a distribution system (one TX and more than one RX), you will need to make sure all encoders and decoders are set to their own unique IP address if the system is set to Static mode.

Many to Point (Switching)

If you are using the VIP300H-U product as a switching system (many TX and one RX), all encoders and decoders must be set to their own unique IP address if the system is set to Static mode, and the transmitters have a unique Channel ID.

Many to Many (Matrix)

When using many of both VIP300H-U transmitters and receivers, all encoders and decoders must be set to their own unique IP address if the system is set to Static mode, and the transmitters have a unique Channel ID.

Setting your computer to communicate with VIP300H-U

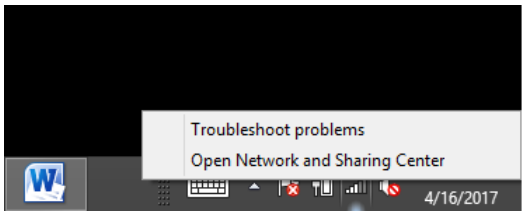
Devices that need to communicate with each other on a network must be in the same IP subnet and not separated by a VLAN configuration.

Assuming for now that you know the IP method and subnet of your VIP300H-U endpoints, you will need to set your computer to be on the same subnet. While the interface and steps on achieving this will be different for each OS and versions of OS, they all require that you set the ipv4 settings of your LAN adapter.

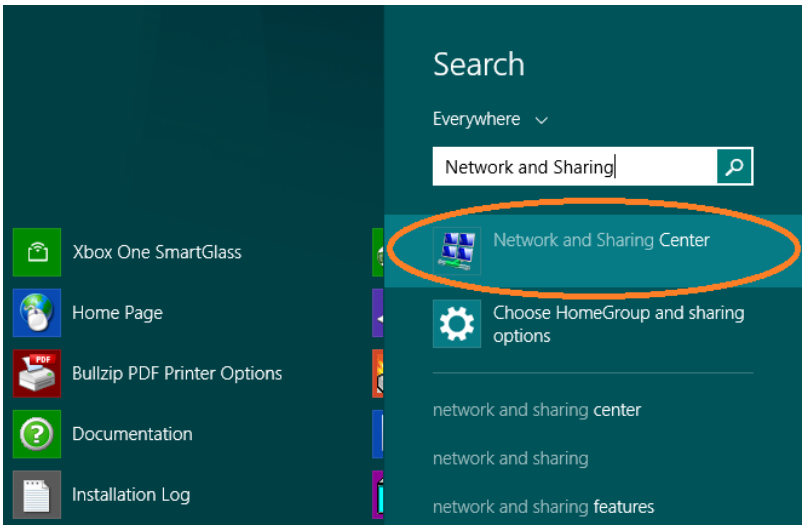
Windows 8.1 and Windows 10 Computer LAN Port Setup

Opening Network Page

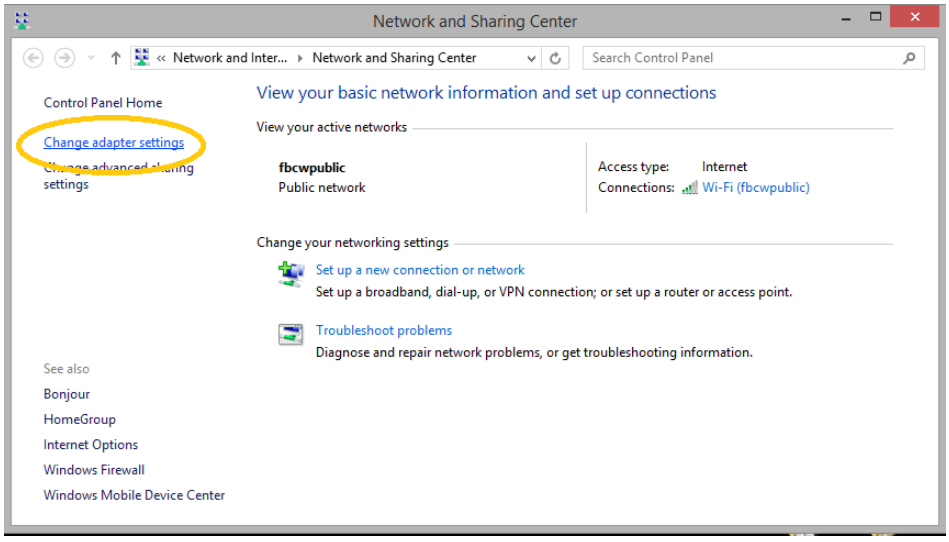
Option 1: Right Click on the taskbar icon that looks like a signal strength indicator. Then click on "Open Network and Sharing Center".



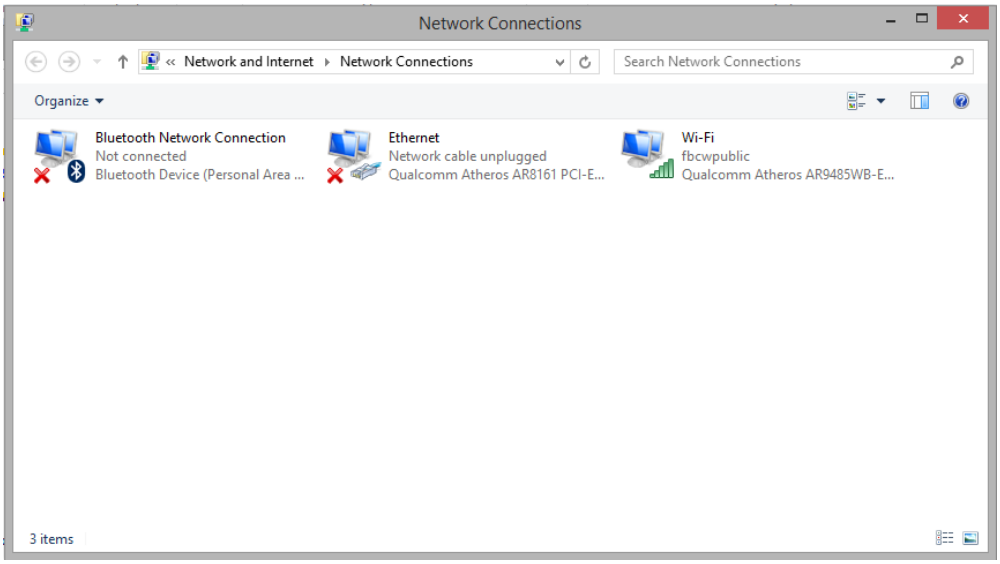
Option 2: Use the search window and type "Network and Sharing Center". When the search function provides choices below, select Network and Sharing Center.



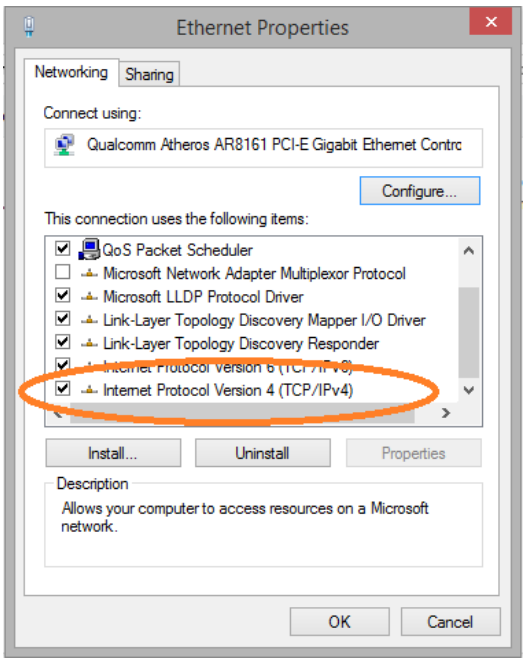
The next page will be as shown below. Select the “Change Adapter Settings”.



When you are in the Change Adapter Settings page as shown below, select the LAN adapter that you will use to communicate with the VIP300H-U system.



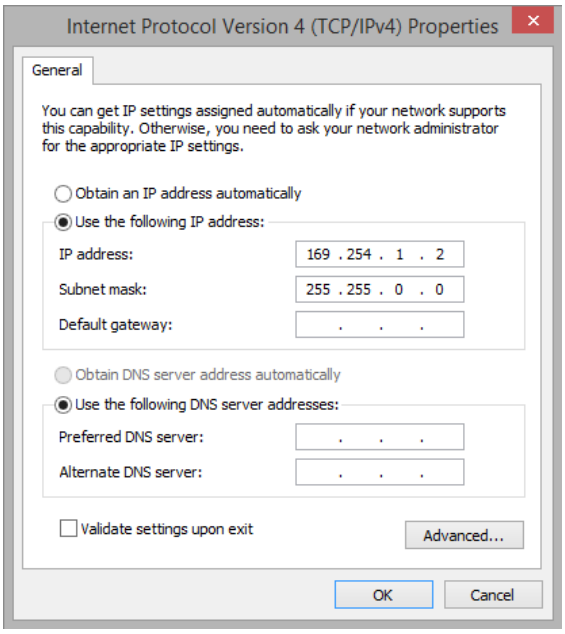
For this example, we will select the middle listing, Qualcomm Atheros LAN Adapter. Double click on the listing. The properties page will open as shown below.



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.

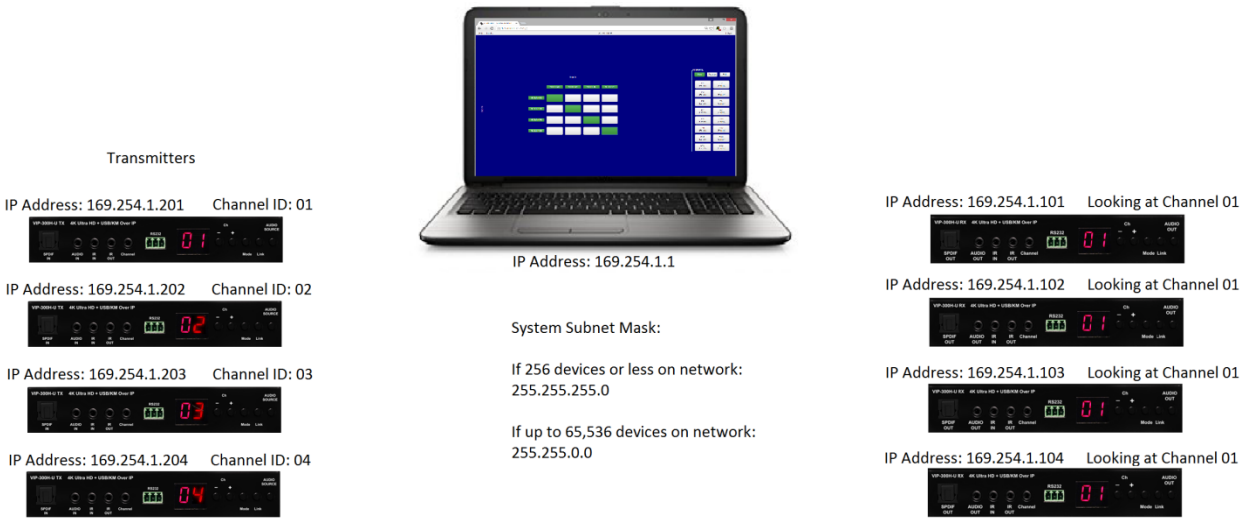
When the window changes to the Properties page for the Internet Protocol Version 4, enter the same IP subnet as the VIP300H-U system.

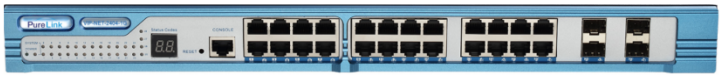


IP Subnet Configuration Example:

4x4 VIP300H-U System

- VPX Management Software running on Windows computer
- VIP-NET-2404-1G network switch as hub
- VIP300H-U system is in subnet 169.254.nnn.nnn
- VIP300H-U TX #1 IP Address: 169.254.1.201
- VIP300H-U TX #2 IP Address: 169.254.1.202
- VIP300H-U TX #3 IP Address: 169.254.1.203
- VIP300H-U TX #4 IP Address: 169.254.1.204
- VIP300H-U RX #1 IP Address: 169.254.1.101
- VIP300H-U RX #2 IP Address: 169.254.1.102
- VIP300H-U RX #3 IP Address: 169.254.1.103
- VIP300H-U RX #4 IP Address: 169.254.1.104





IP Address does not have to be in same subnet to allow system to work, however it is best to set it in the same subnet to access switch functions

IP Address: 169.254.1.11

IP Address and Channel settings

In order to work together, VIP300H-U transmitters and receivers require unique IP addresses so they can discover each other. The VIP300H-U endpoints have three 'methods' of IP addressing.

Auto IP (factory default setting)

Auto IP provides automatic IP address assignment when two or more endpoints are on the same network switch. The default IP subnet is 169.254.nnn.nnn.

In order to discover devices when employing Auto IP, the following methods can be used.

TX (Encoder)

- Use the VPX IP Management software to discover the TX. Please see VPX reference at end of manual.
- Connect the TX to and RX. Connect a display to the RX HDMI output. Do not connect any source to the TX. The RX will display IP address information for both devices in the lower right corner of the display area. The 'local IP' is the RX address, the 'host IP' is the TX address.

RX (Decoder)

- Use the VPX IP Management software to discover the TX. Please see VPX reference at end of manual.
- Connect the RX HDMI output to a display. Do not connect any devices to the RX such as a TX. The RX will display IP address information in the lower right corner of the display area. The 'local IP' is the RX address

DHCP

DHCP mode allows the endpoints to acquire an IP address from a DHCP server on the network.

Static

Static IP mode allows the endpoints to be manually set to known IP addresses. Be certain to set the endpoints to the same IP subnet.

Note: Performing a factory default of the endpoints will set them to Auto IP mode.

Network switch requirements

The minimum requirements of a network switch for the VIP300H-U are:

- 1G Port speeds
- Backplane data rate performance that exceeds the total data rate of your VIP300H-U system
- Jumbo Frame
- IGMP Snooping

Network switch recommendations

While not required to operate the VIP300H-U, you may want to utilize the Power over Ethernet feature of the product. A network switch that supports PoE specification 802.3af is acceptable. However please carefully review the full power budget capacity of the switch to make sure it can handle the number of VIP300H-U units that you will populate the switch with.

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

Setting up a VIP300H-U system:

Point to Point (Extension)

VIP300H-U Point to Point direct connection

Connecting a transmitter and a receiver together to make an extender system can be done by directly coupling the units with a category cable. While it is not necessary to have a network switch involved, you can still create a point to point system using a switch in between the transmitter and receiver.

IP Address: 169.254.1.1

Transmitters

IP Address: 169.254.1.201 Channel ID: 01

While a 1x1 configuration does not require a network switch or computer, you can connect a 1x1 through a switch if you need to. You can also use a computer to access the web page setup utilities for the transmitter and receiver.

IP Address: 169.254.1.101 Looking at Channel 01

IP Address does not have to be in same subnet to allow system to work, however it is best to set it in the same subnet to access switch functions

IP Address: 169.254.1.11

When the encoder and decoder are both factory set to Auto IP, they assign themselves unique IP addresses and therefore will work out of the box. The Channel ID must match on the encoder and decoder.

No external control is necessary to operate. If you desire to change the settings of either the encoder or decoder, you can access their built in web pages.

Point to Many (Distribution)

When creating a point to many (1 Transmitter to multiple Receivers), a network switch is required.

Many to Point (Switching)

Many to Many

Connections

Power

Each VIP300H-U transmitter or receiver can be powered from a network switch port that provides PoE power compliant with the 802.3af specification.

If you are using fiber connectivity and cannot utilize PoE over CAT, or you prefer to use power adapters, an AC to DC power adapter is supplied standard with each device.

Network

Category

TheVIP300H-U supports standard category RJ45 connectivity. It is recommended to use CAT6a cabling to ensure best performance

Fiber

The VIP300H-U supports standard SFP (1G) 2LC fiber modules. PureLink resells verified tested multi-mode and single-mode versions of SFP modules. While it is possible to use other SFP modules, please take care in selecting quality modules. We recommend testing SFP modules with the VIP300H-U's and the selected network switch.

Audio

Transmitter

The VIP300H-U TX accepts audio over HDMI. It is possible to replace the HDMI audio by utilizing the SPDIF input or the 1/8" analog stereo input. By using the Audio Source button on the left, you can select one of the three audio sources to travel with the HDMI video.

Receiver

The VIP300H-U outputs audio on the HDMI output connector. The receiver also provides selection of a second audio output on either the SPDIF output or the analog stereo output. Please note the outputs require the audio to be in the same format as how they originated at the transmitter.

Video

The VIP300H-U TX accepts HDMI 1.4b video formats.

The VIP300H-U RX incorporates a single HDMI output

Please see Appendix C: HDMI 1.4b

Infrared

RS232

Video functions

RX Scaler settings

The VIP300H-U provides three modes of scaler output:

- Pass through – overrides scaler reformatting and provides the same signal as found at the connected transmitter, providing it is within product's signal specifications.
- 1080P – converts all compatible signals to 1080P60 output
- 4K30 – converts all compatible signals to 4K30 output

The scaler settings are accessible from the built in web page of the RX, under the 'Functions' tab. The scaler settings are also accessible from the VPX Device Management page.

Changes to the scaler settings will require a reboot of the RX.

Video wall settings

The VIP300H-U supports up to an 8x8 video wall configuration.

The video wall settings are available from the built in web page of the RX. The video wall functions are also accessible from the VPX Device Management page. VPX provides automated setup of each receiver in a videowall array, making configuration easy and quick.

Video Wall Reconfiguration

It is possible with external control automation and VPX+ to reconfigure receivers to different image zones dynamically. This allows you to change the layout of a video wall. Examples are shown in Appendix XX: Video Wall Configurations

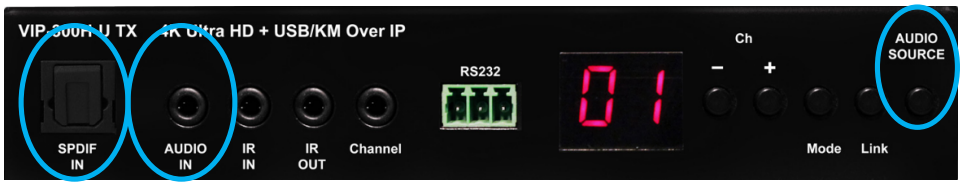
Audio functions

Embedding audio on the TX

There are three options on the transmitter for audio to travel with the HDMI video signal.

- HDMI audio (Default)
- SPDIF audio
- Analog stereo audio

Selection is made with the front panel 'Audio Source' button.



When you press the Audio Source select button, the audio selection will cycle through HDMI, SDPIF, and analog audio inputs. LED illumination for the SPDIF and Audio In (Analog) will indicate which one is selected. If neither input is illuminated, the HDMI audio is selected.

Audio outputs on the RX

In addition to the HDMI audio transport, you can select either SPDIF or Analog Stereo audio out. Selection is made with the front panel 'Audio Out' button.

Control functions

IR receiver for RX – Channel operations

The 'IR Ch' input jack on the front of the RX allows for acceptance of channel change commands at locations remote from the RX. The supplied IR receiver can be mounted in an appropriate area such as the front of a display.

Note: There is no IR receiver on the RX. You must use the IR receiver extender.

While the TX does provide the same extension IR channel selection functionality, it is recommended you only set the channel of the TX at time of system setup. Changing the TX channel after the system is set up in most cases may create undesired performance.

Extending RS232 signals

RS232 signals follow a transmitter and the receivers 'looking' at its signals. One possible scenario is to send RS232 commands from the transmitter position to one or more receiver positions. The number of receivers obtaining the RS232 commands is determined by how many are linked to that transmitter. Keep in mind that return strings to the transmitter may be unreadable when the number of receivers send acknowledgement RS232 commands could create collisions.

When using the VIP300H-U in conjunction with VPX IP Video Management Software, it is possible to send RS232 commands via the RX to perform display control.

When your system design is not using RS232 extension, it is recommended to disable RS232 to reduce impact on data stream.

Extending IR signals

RS232 signals follow a transmitter and the receivers 'looking' at its signals. The VIP300H-U provides IR extension in both directions: Sending IR from the transmitter location to the receiver location (e.g. display control), and receiver location to the transmitters location (e.g. source control).

Extending USB signals

The VIP300H-U USB 2.0 ports support keyboard, mouse, and flash drive extension.

When your system is not using RS232 extension, it is recommended to disable USB to reduce impact on data stream.

Network functions

Connecting using Category cable

The VIP300H-U transmitters and receivers provide up to 120 meters (390 ft.) of extension between end points or a network switch when using quality Cat6 shielded cable.

Connecting using fiber cable

Using an optional SFP 2LC fiber module, the VIP300H-U can extend long distances with multimode and single mode SFP modules, depending on model and specifications of the module.

Due to the data rate of the VIP300H-U TX being under 1G, it is only necessary to use SFP modules.

Troubleshooting

Display shows FF

- RS232 mode switch is in Program mode, not Normal mode

Display "Network Link is Down" in lower left of screen

- Network cable is disconnected or faulty
- Network switch is disconnected of faulty