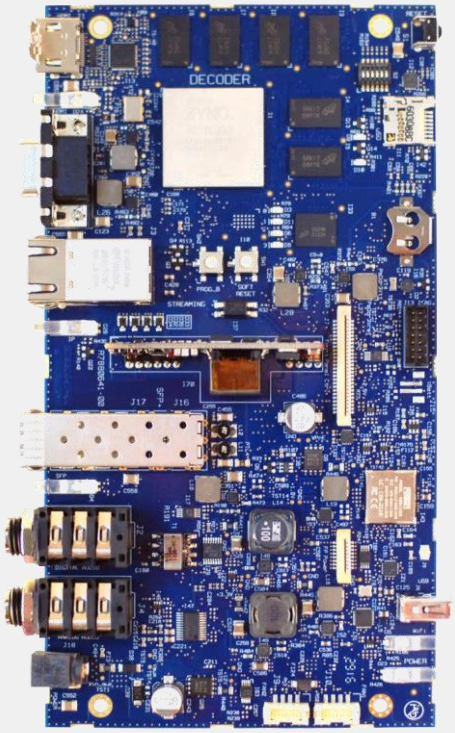
BarcoSilex

VIPER-HV4K family

# Viper

## OEM Board for 4K HDMI transport over IP

**The Viper boards are fully integrated boards that enable the development of ultra-low latency audio/video over IP products. The transmit and receive boards are production-ready and reduce the cost of the system. Viper-HV-4K features high resolutions up to 4K/UHD over a single 1 Gb Ethernet cable. The HDMI video is transported over Ethernet after compression with the VC-2 HQ video compression.**




## Applications

- Video conferencing
- Residential Audio/Video distribution
- Digital signage
- Video wall
- Real-time local video network
- HDMI extender
- HDMI capture and transmission to server
- VC-2 HQ encoding/decoding

## Key Features

- Networked audio/video distribution over standard IT infrastructure
- Ultra-low latency 4K/UHD Video transport over 1G Ethernet
- Flexible network: point-to-point unicast or multicast distribution
- Fully integrated/validated solution, production-ready for OEM
- VC-2 High Quality Low Delay profile for visually lossless compression (SMPTE 2042)

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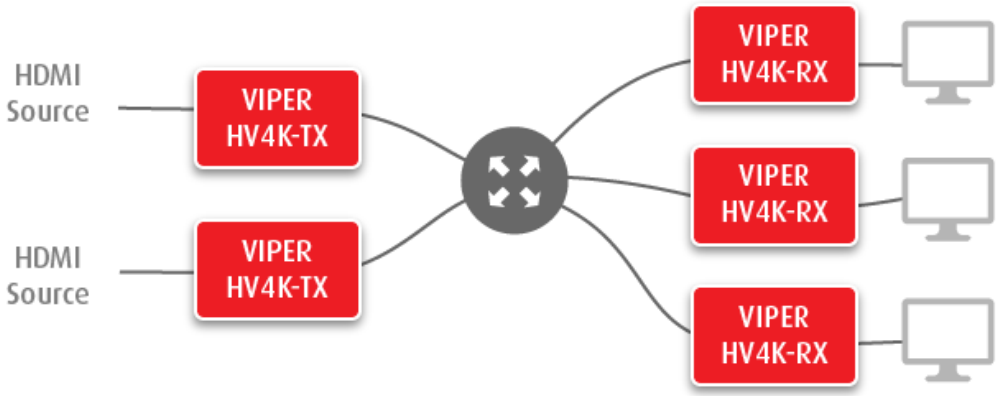
# Viper: OEM Board for 4K HDMI transport over IP

## HDMI distribution over IP network

### Easy networking capabilities for video and audio

The Viper boards can be used to efficiently transport audio/video streams over an IP network. The TX board is used to interface the HDMI source to the network, while one or multiple RX boards can be used to receive the audio/video stream. Several TX boards can be used on the same network in order to share the content of multiple HDMI sources. Each RX board can select the channel to listen to.




## The details that make the difference

### Secure and reliable audio/video transmission

The transmission of the audio and video from the encoder to the decoder board can be protected with AES encryption in order to guarantee confidentiality of the streamed content. Additionally, forward error correction (FEC) provides a reliable audio/video transmission in case of packet loss or corruption.

### Advanced image processing capabilities

The Viper boards also support upscaling/downscaling and cropping of the video to match the receiving display. The administrator can easily insert a logo, image or scrolling text on top of the video content. Many parameters can be configured including the position and transparency of the logo, the font size, color and speed of the text.

### Power over Ethernet (PoE)

With the Power-over-Ethernet feature, networking communication and power supply can be provided over a single Ethernet cable. The external power supply is not required anymore. The Viper boards are compliant with the IEEE 802.3af/at.

# HDMI to IP transmitter/receiver specifications

## Audio/Video Networking

| | |
|---|---|
| AV connectivity | HDMI 1.4 with HDCP 1.4 |
| Video format | All resolutions and frame rates up to 4096x2160 at 30fps<br>8-bit, 10-bit and 12-bit, 4:4:4 and 4:2:2<br>EDID Smart Management |
| Video codec | VC-2 High Quality Low Delay (SMPTE 2042)<br>Configurable bitrate/compression ratio |
| Video processing | Upscaler/downscaler at receive side<br>Cropping, padding, logo and text insertion |
| Audio | 7.1 (8ch PCM), 24-bit @ 32/44.1/48/88.2/96/176.4/192KHz<br>LPCM, DTS, and Dolby formats<br>External analog/digital audio embedding/de-embedding |
| Latency | 5 ms end-to-end (encoder + decoder) |
| Security | AES encryption, HDCP 1.4 |
| Reliability | Forward Error Correction (FEC) and Quality of Service (QoS) |
| IP addressing | Unicast, Multicast |
| AV transport protocols | IP, UDP, RTP, RTCP, SAP/SDP |
| Network protocols | DHCP, mDNS, IGMP, TCP/IP, ARP |

## Configuration

| | |
|---|---|
| Network based | Web-based configuration manager (GUI)<br>JSON API over WebSocket, Secure Remote System console |
| COM port | Command line interface |
| Upgrade | Firmware field upgradable |

## Interfaces

| | |
|---|---|
| Audio/Video | HDMI 1.4 Input (encoder only) with HDCP 1.4<br>HDMI 1.4 Output (decoder only) with HDCP 1.4<br>1/4'' jack (TRS), analog and digital audio input (encoder only), and output (decoder only), AES/EBU, S/PDIF |
| Communication | 1Gb Ethernet RJ45<br>Serial RS-232 and Wi-Fi 802.11 for configuration |
| Others | I²C, SPI, GPIO for additional interfaces (LED, IR, button, display…) |

## Other specifications

| | |
|---|---|
| Temperature | Operating: 0° C to +55° C |
| Dimensions (L x W x H) | 200 x 106 x 23 mm (7.9 x 4.2 x 0.9 in) |
| Power supply | 12 V DC – Power connector<br>PoE (IEEE 802.3af) and PoE+ (IEEE 802.3at) |
| Power consumption | 12 W typical |

## Ordering information

The Viper 4K HDMI over IP product family includes a couple of complementary products. There is the transmitter board, and the receiver board:

| Part Number | Description |
|---|---|
| VIPER-HV4K-TX | **Transmitter** HDMI over IP 4K with VC-2 HQ compression |
| VIPER-HV4K-RX | **Receiver** HDMI over IP 4K with VC-2 HQ compression |

## More Viper technology

Additional features and options will be integrated in next-generation products, enabling additional use cases and applications. Here is an overview of the most important features:

- **JPEG 2000 codec:** Very high quality with JPEG 2000 encoding enables higher compression of the video content with a visually lossless quality. The transport is also very low latency.
- **HDMI 2.0 / HDCP 2.2:** Support for the latest HDMI interface standard for even higher video pixel rates (higher resolution and frame rate), including latest content protection standard.
- **10 GbE:** Faster networking interface for either lower compression ratio or higher resolution video transport.
- **Uncompressed Video:** Raw video transmission without any encoding for critical applications.

## Customization

The Viper products can also be tailored to your needs. The on-board SoC FPGA is an extremely flexible solution. The video/audio path is processed in real-time within the FPGA fabric while the processor is handling all the control and configuration of the board. Both the FPGA firmware and the CPU software can be changed to match your needs.

Please contact our sales team to discuss your specific requirements. The expertise of Barco Silex in high-end video technology is the guarantee for a fast time-to-market with a high quality product.

## About Barco Silex

Barco Silex is the leading provider of **high-end image compression technology** for hardware including JPEG, JPEG2000 and VC-2 HQ. Next to the off-the-shelf Viper products, Barco Silex also licenses the video compression technology for integration in your own products. Many companies in broadcast, Pro AV and defense market already use Barco Silex compression in their systems.

Barco Silex is also specialized in security and cryptography. This expertise can be combined with the video transport in order to provide secure video transmission and content protection solutions.

### For more information, please contact us.

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