Avocent

RACKit® Technology Corporation

Expert Solutions for the LAN Environment™

The Power of Being There®

Technical Brief

Wireless KVM Connectivity

WHAT'S INSIDE

How Avocent is bridging KVM and wireless technologies

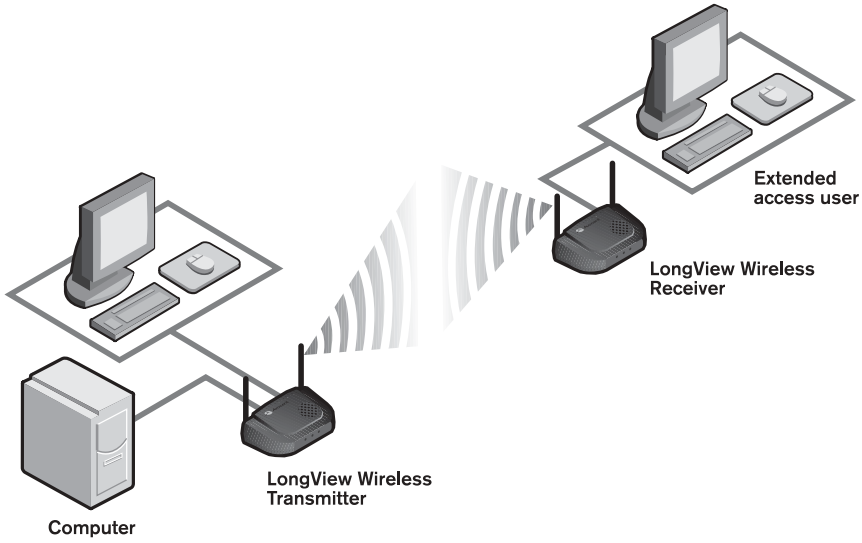
TECHNICAL SUMMARY

Wireless KVM technology combines proprietary digital signal processing and data compression technology with the latest broadband digital RF transmission. This proprietary design is based on the 802.11a standard. The IEEE 802.11a standard can increase the data throughput to an upper range of 54 Mbps within the 5 GHz band utilizing Orthogonal Frequency Division Multiplexing (OFDM) technology.

This wireless KVM-based system transmits high-speed digital data over a radio utilizing OFDM which splits the radio signal into multiple, smaller sub-signals that are subsequently transmitted simultaneously at different frequencies to the receiver. OFDM reduces the amount of crosstalk (interference) in signal transmissions.

The design implements noise filtering, Codec, local video format detection, clock/phase auto setup, 802.11a communication protocol between devices and I/O arbitration. Security is implemented through Advanced Encryption Standard (AES).

The following diagram shows how the design enables the flow of video and controls between computers and displays.



AVOCENT'S WIRELESS KVM SOLUTION

Wireless Keyboard, Video and Mouse (KVM) Extender

Avocent's innovative LongView Wireless solution is a wireless keyboard, video and mouse (KVM) extender that connects monitors, keyboards, mice and audio devices to a computer wirelessly, up to 100 feet away, without cables. Its' industry standard design makes the LongView Wireless extender compatible with virtually any PC, display technology and operating system. It is essentially a plug-and-play installation, requiring no new operating system, drivers or application software.

LongView Wireless KVM Design

LongView Wireless includes a wireless Transmitter and Receiver, power supplies and audio cables. Also included in the LongView Wireless firmware is a user-friendly On Screen Display (OSD) feature for making adjustments and tuning the video settings.

LongView Wireless Transmitter

The LongView Wireless Transmitter connects directly to the computer and serves as the radio interface device enabling the computer to transmit audio and video data. It also acts as the receiver for keyboard and mouse data sourced from extended devices. The LongView Wireless Transmitter contains five chassis-mounted connectors for local video, keyboard and mouse peripherals in addition to power and audio in from the computer. It includes a 3-1/2 foot cable with video, keyboard (PS/2) and mouse (PS/2) connectors. Power is supplied to the Transmitter from a universal input 12V DC switching power supply.

LongView Wireless Receiver

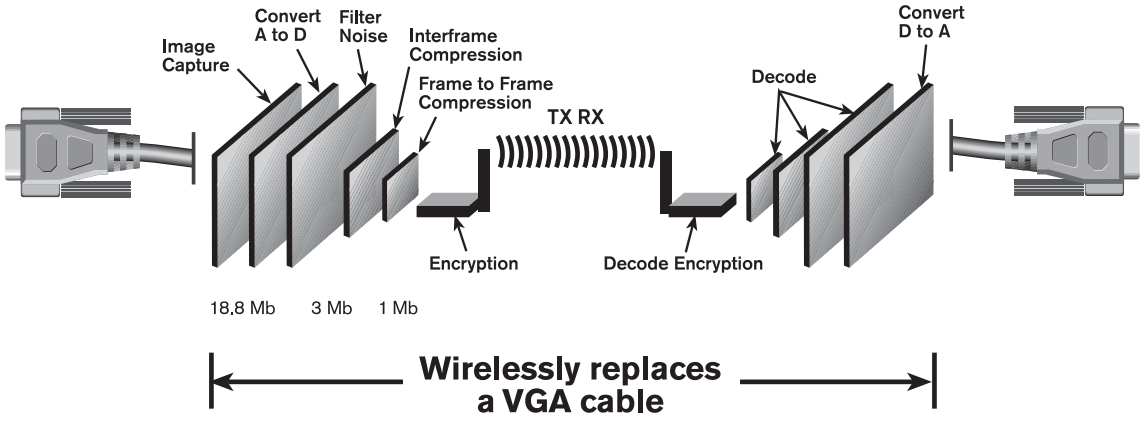
The LongView Wireless Receiver connects directly to the user interface devices (keyboard, video monitor, mouse and audio speakers or headphones), serving as the radio interface device for these components. It receives audio and video data from the source computer and sends keyboard and mouse data from the user interface devices to the source computer. The LongView Wireless Receiver has five chassis-mounted connectors for video, keyboard, mouse and audio peripherals and power. Power is supplied to the Receiver from a universal input 12V DC switching power supply.

LongView Wireless On Screen Display

The LongView Wireless OSD permits adjustments to be made to the system's video parameters. The horizontal and vertical position of the video monitor window, the brightness and contrast of the video image and the clock phase can all be adjusted to assure the cleanest, sharpest video image. The OSD is only accessible at the Receiver unit.

HOW LONGVIEW WIRELESS WORKS

The LongView® Wireless KVM extender is a digital system that processes analog video inbound and outbound utilizing a unique, proprietary compression engine. At the heart of the compression engine is a multimedia DSP and an FPGA that are coupled to an IEEE 802.11a radio board. The LongView Wireless system design is based on the 802.11a standard and enables wireless KVM extension up to 100 feet indoors through multiple walls.



Transmitter - The LongView Wireless Transmitter, which contains two circuit boards, a main board and a radio board connected to the main board by a mini PCI bus connector, digitizes incoming analog video and audio. It then filters and compresses each video frame using proprietary compression algorithms. Once the compression is complete, the Transmitter encrypts the compressed video and audio for security purposes and transmits the data across the proprietary wireless transport protocol. Video images are stored in the SDRAM for frame-to-frame comparison, as illustrated in the diagram above. The Transmitter communicates with the host computer, mimicking mouse and keyboard functions. It also receives mouse and keyboard data from the LongView Wireless Receiver, controls the radio to set up an ad hoc network with the LongView Wireless Receiver and operates the transport mechanisms to transmit and receive packets of data across the wireless network.

Receiver - The LongView Wireless Receiver contains two circuit boards, a main board and a radio board that is connected to the main board via a mini PCI bus connector. The LongView Wireless Receiver receives packets of video data from the network and stores the data in SDRAM. It decompresses each video frame and drives 1024 x 768 images (also 640 x 480 or 800 x 600) at 60 Hz vertical refresh rates. The LongView Wireless Receiver also accepts packets of audio data from the network using the data to drive the audio codec as illustrated in the diagram above. The LongView Wireless Receiver communicates with any connected mouse and/or keyboard, packetizes mouse and keyboard data and submits the packets to the network transmission queue. In addition, the LongView Wireless Receiver is responsible for initiating the ad hoc network with the LongView Wireless Transmitter, operating the transport mechanisms used to transmit and receive packets of data across the network and generation and control of the OSD.

LongView Wireless Peripheral Compatibility

Keyboard: The Transmitter and Receiver support virtually any standard PS/2 keyboard.

Mouse: The Transmitter and Receiver support two-button PS/2 mice. Mice that are not two-button type will work but with reduced functionality.

Video: The LongView Wireless system supports VGA, SVGA and XGA resolutions up to a 60 Hz refresh rate. CRT and LCD monitors with standard 15-pin high-density connectors are supported.

Audio: Speakers and headphones with 3.5mm audio plugs are supported on the receiver side of the LongView Wireless system provided the Transmitter has been connected to the sound card of your PC with the provided audio cable.

LONGVIEW WIRELESS SPECIFICATIONS

Multimedia

Video Link Performance:	640 x 480, 800 x 600, 1024 x 768
Video Link Compatibility:	VGA, SVGA, XGA
Video Interface:	VGA compatible Analog RGB (15-pin, D-shell), non-interlaced 60 Hz refresh rate
Audio Support:	Digital audio

Supported Hardware

Computer:	Most standard computers with the exception of Macintosh
Video Resolution:	VGA, SVGA, XGA
Peripherals:	PS/2 keyboard, PS/2 mouse, extended speakers

Radio

Radio Protocol:	IEEE 802.11a
Radio Frequency:	5150-5250; 5250-5350; 5725-5825 MHz
Radio Modulation:	OFDM
Nominal Output Power:	17 dBm
Range:	XGA video resolution to 100 feet
Security:	AES encryption with 802.1x authentication

About Avocent Corporation

Avocent (NASDAQ: AVCT) is the leading worldwide supplier of KVM (keyboard, video and mouse) switching, remote access and serial connectivity solutions that provide IT managers with access and control of multiple servers and network data center devices. Avocent's KVM solutions are distributed by the world's largest server manufacturers and installed in Fortune 100 companies around the world. Visit www.avocent.com for more details.

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