

COLOR HIGH-SPEED VIDEO SYSTEM

Model 9710

The Color High-Speed Video (CHSV) System, Model 9710, is the latest generation high-speed laryngeal imaging system from KayPENTAX. It offers state-of-the-art features for voice research and clinical applications at an affordable price. Vocal fold dynamics that are not observable using stroboscopy, such as voicing starts and stops, aperiodic vibrations, very short voicing segments, and spasms, can be observed with clear, sharp color image quality.

The complete system with cart, computer, light source, and optional Waveform Data Acquisition box and EGG.



Advanced Imaging Technology

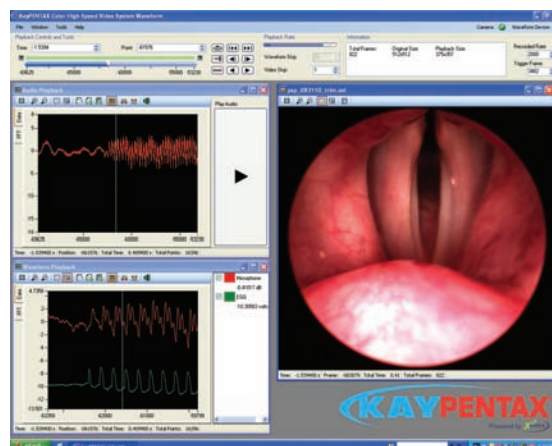
Frame rates of 2000 frames per second (fps) with a 512 x 512 pixel resolution, 3000 fps with a 512 x 352 pixel resolution, or 4000 fps with a 512 x 256 pixel resolution are typically obtained with the small, lightweight, remote head of the color camera. An optional black-and-white camera head is easily connected in place of the color head, providing increased sensitivity when using frame rates of 4,000 fps and higher. Up to four seconds of video can be recorded at camera speeds of 2000 frames per second and higher.

New User Interface with Exciting New Features

The new CHSV system features custom-designed software and hardware that provides audio recording and playback capability as a new standard feature, so that the patient phonation is now recorded as part of the high-speed video exam. The system includes a new audio capture module and high-quality, clip-on microphone, with a gain adjustment knob for setting the microphone level. The user interface has all camera settings, light settings, and camera controls laid out in an intuitive manner, which makes setting up and recording an exam simple and straightforward. The audio and video are time-synchronized, meaning that both recordings start and stop at the exact same instant. Also, because the audio sampling rate is derived from the camera frame rate, every sample in the audio recording is associated with a corresponding frame in the video recording. In Playback Mode, audio is played back at normal speed, while the video is played back in slow motion, allowing the phonations made by the patient to be heard by the clinician while studying the dynamics of vocal fold motion.

FEATURES

- View vocal fold dynamics regardless of periodicity
- Lightweight, remote camera head
- Foot-switch control of recording
- All critical CHSV System components available from KayPENTAX
- Optional black-and-white camera head for increased sensitivity
- Standard configuration includes Audio Capture Module with clip-on microphone, for recording patient phonation
- Waveform option includes Waveform Data Acquisition Box for capturing 8 additional signals (for example, EGG, EMG, or accelerometer), in addition to Audio Capture Module
- Includes KayPENTAX Image Processing Software



The new CHSV application Playback Mode, with side-by-side viewing of time-aligned audio, video, and waveform data.



The High-Speed Camera Controller and color camera head, with lens adapter and rigid endoscope. Camera head dimensions are 35 mm x 35 mm x 35 mm and weight is 90 g (3.2 oz).



The audio capture module offered with the standard CHSV system. A high-quality, clip-on microphone is also included.

The Waveform option includes a Waveform Data Acquisition Box for capturing up to eight additional time-linked signals, such as EGG, EMG, or accelerometer signals. Each channel can be configured separately, and frequently used configurations can be stored and retrieved for easy set up. With the new software, audio, video and waveform signals are recorded and played back in synchrony with the video. As the video plays, a cursor moves through the waveform. If the cursor is moved to a location in the waveform, the video moves to the corresponding image.

Both the standard configuration and Waveform option allow small sections of interest to be selected for easier viewing, saving, and transporting of exam files. Using the comprehensive set of tools available in Playback Mode, zooming in to a small segment of audio (or waveform) data and trimming away the rest automatically selects the

corresponding segment of video, so that long recordings (corresponding to large files) can be saved as many smaller, separate exam files. The aligned audio and video (and waveform data, if included) are automatically saved together when the exam is saved. In addition, the video AVI files can be viewed with most media players; audio signals can be exported to separate WAV files; and waveform data can be exported to text files, DAT files, or Excel spreadsheets (Excel software not included). Video files can be saved with no compression, for highest image quality, or a number of different compression schemes can be selected if storage space is limited.

Complete System Solutions

KayPENTAX offers all components for a complete high-speed system, including the KayPENTAX 300W Constant Xenon Light Source, Model 7152A, with ample illumination (required for HSV) and IR filtering (to reduce heat transmitted to the endoscope), lens adapter, rigid endoscope, and host computer with a high-speed Ethernet connection for fast transfer of video data. In addition, the high-speed camera hardware and software are available for use with a customer-supplied desktop PC or laptop. (For host PC requirements, see the CHSV page under Products on our Web site, www.kaypentax.com.)

Complementary Laryngeal Imaging Tools

The Color High-Speed Video System is an ideal complement to the KayPENTAX Digital Strobe, allowing observation of vocal fold dynamics regardless of phonatory behavior or periodicity. Used together, these two modes of laryngeal imaging allow clinicians to record and observe many different vocal behaviors and disorders, in a wide range of patients.

SPECIFICATIONS

- Camera head dimensions: 35mm x 35mm x 35mm
- Camera head weight: 90g (3.2 oz)
- 2,000 frames per second (fps) at maximum resolution (512 x 512 pixels) with color or optional b/w camera head
- 3,000 fps at 512 x 352 pixels, color or b/w head
- 4,000 fps at 512 x 256 pixels, color or b/w head
- 5,000 fps or 8,000 fps at 512 x 256, typically requires b/w head
- 10,000 fps at 512 x 96, typically for *ex vivo* analysis with b/w head
- Records up to four seconds of video at camera rates of 2000 fps and higher

For more information about this and other KayPENTAX products, contact:



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