

# DIGITAL STROBE



*An innovative system  
for endoscopy  
recording and exam  
management*

- Excellent image quality for stroboscopic and endoscopic exams
- Instant retrieval and playback of recorded procedures
- Ideal for laryngeal, TNE, sinus, and other endoscopy procedures
- Report generator containing images and key exam findings
- Standard video formats for portability of exam segments
- Patient database (SQL) and exam management system
- Acclaimed stroboscopic light source for superior image quality
- Comprehensive networking solutions
- Easy DVD creation for patients or referring physician



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## Introduction

The Digital Strobe is an advanced imaging system that digitally records stroboscopic, and other endoscopic, exams to a fully integrated video capture and playback workstation. Designed for otolaryngologists, speech pathologists, phoniatricians, and voice scientists, the Digital Strobe has become the system of choice at leading hospitals and clinics worldwide since its introduction in the late 1990s. The latest version contains a host of new features and options to provide the most versatile and feature-rich imaging system available for comprehensive assessment of the vocal folds' structure and vibratory characteristics. It is also ideally suited to serve as a general recording system for endoscopic procedures (e.g., sinus, TNE, or otoscopic exams) with superior image quality. The system enables clinicians to take advantage of the many built-in features designed to enhance clinical efficiency. The latest Digital Strobe has a variety of networking options available to users of a single system as well as those with multiple endoscopy procedure rooms.

## Superior Stroboscopy Light Source

One of the key components to any "true" stroboscopy system is the light source. KayPENTAX's stroboscope uses 5-microsecond flashes to freeze the quickly vibrating vocal folds, thereby providing razor-sharp image clarity throughout the glottal cycle over a wide range of fundamental frequencies and vocal amplitudes. Shuttered-camera approaches that attempt to mimic stroboscopy are unable to match this image quality which is particularly evident when a recording containing motion, such as vocal fold movement, is paused for image analysis or printing a still.

KayPENTAX's light source contains all of the key features for maximum quality and versatility: excellent illumination of laryngeal images with both xenon and halogen constant light sources, slow motion playback of the vibrating vocal folds, accurate pitch extraction over an extensive amplitude range, footswitch control of important functions, throat microphone or EGG input, fast lock-on time, and field replaceable bulbs.

Many stroboscopy light sources vary in brightness during the glottal cycle resulting in a "blinking" image quality. This effect may be accentuated with changes in amplitude and fundamental frequency. KayPENTAX's light source includes a special circuit that eliminates blinking video and provides uniform brightness throughout the patient's pitch and amplitude range.

## Powerful Image Capturing System

The Digital Strobe includes all of the capabilities to capture and play back motion video without artifacts. Audio (patient audio or examiner comments) and video are captured together. To ensure precise color accuracy and convenient setup, the computer system downloads optimized camera settings for each endoscope. The image quality is superb with progressive scan display (no flicker).

From any exam recording, images (stills and video clips) can be extracted and viewed on other computers, sent electronically to colleagues, or placed in a PowerPoint presentation. Additionally, a DVD of user-selected segments can be created to provide to patients or to referring physicians. The latest system also has many networking options available (*endoPortal*, *endoServer*, and DICOM Compliance Module) for remote exam review and data storage in a central data repository within a facility.

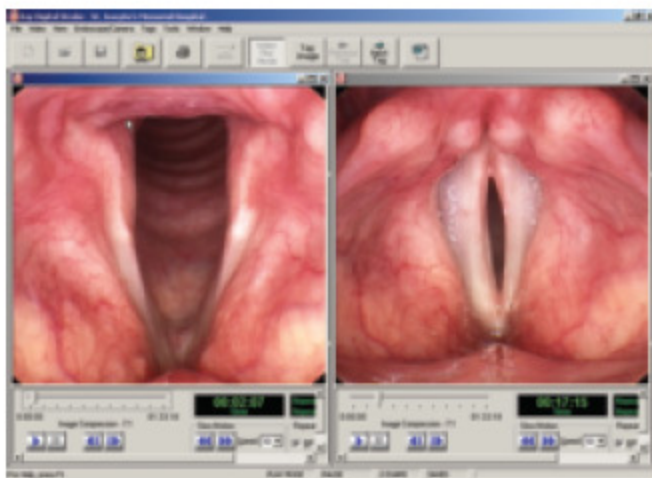
Originally designed primarily for recording stroboscopy procedures, the Digital Strobe has evolved into a versatile endoscopic recording workstation that can be used to record all endoscopic procedures in the ENT/speech clinic. Its built-in patient database (using standard SQL format) and exam management system allow the procedures to be easily accessed for review at any time.





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## Versatile System for Rec



*In just seconds, two exams can be loaded to facilitate comparison.*

### Professional Quality Video

Medical records require high-quality video images without artifacts. The KayPENTAX Digital Strobe provides accurate, artifact-free video (with concurrent audio) with superior resolution and clarity. The exam is recorded in an uncompressed format for immediate review. Saved exams are subsequently stored for later retrieval and playback in industry-standard (compressed) DV-AVI format. Adjustable parameters facilitate capture of all types of video images with excellent results including rigid laryngeal endoscopes, sinusscopes, flexible (fiberoptic) endoscopes, and chip-tip videoscopes.

### Instant Review of Exams

Playback of exams on the system is immediate. The user can quickly advance to any section of the procedure (using a slider) and begin reviewing. Stills of interest can be quickly selected and labeled for inclusion in the exam report. The video can be played back at real-time speed, in slow motion, or frame by frame. Mouse-wheel control of the video is an additional convenience tool for exam review.

### Control of Camera

A key benefit of the Digital Strobe software is computer integration with the system's camera, which enables automatic loading of optimal camera settings (defined by the user) with each endoscope and light source selected. With this feature, the examiner obtains consistent color, appropriate camera sensitivity, and faster examinations because there is no need for ongoing camera adjustments. The result is greater clinical efficiency and consistent image quality.

### Playback of Two Exams Side by Side

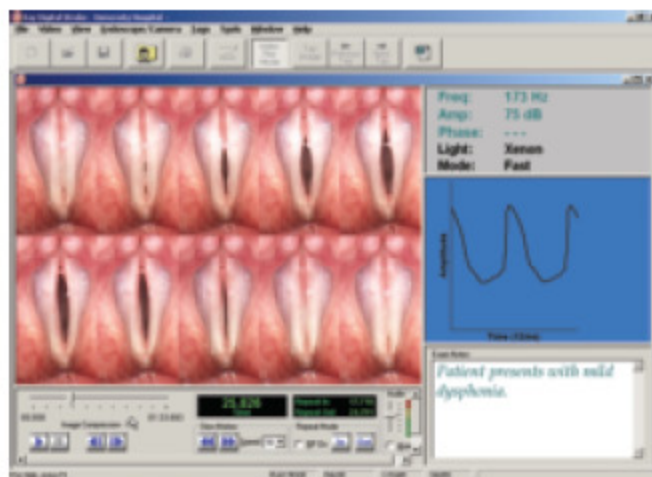
Two patient exams can be loaded concurrently and compared side by side. This feature facilitates accurate assessment and in-depth comparison of physiology and anatomic structures before and after surgery, or therapy.

### Patient Database and Exam Management System

With a built-in patient and examination database, clinicians are relieved of the responsibility of manually cataloging previously recorded exams; the system loads them instantly after accessing the patient's name with exam listing(s). Associated with each patient is not only the location of stored exams for convenient retrieval, but also a database containing important patient history, and key exam findings listed under user-definable fields and editable entries. Multiple exam templates can be configured and tailored to various endoscopic procedures (stroboscopy, TNE, sinus, etc.). These data then appear with user-selected stills in the exam report.

### Report Generator

After a clinician enters various data related to the patient and exam, adds comments, and selects key stills from the exam, the Digital Strobe automatically generates a report containing this data as a Microsoft Word document. The user can select which images and exam observations to include in the report, making it possible to generate a concise single-page summary or a more comprehensive multi-page document. The report is easily integrated into the hospital's electronic medical records because it uses a standard Word format (i.e., not proprietary). It can also be printed for records or used for insurance filing.

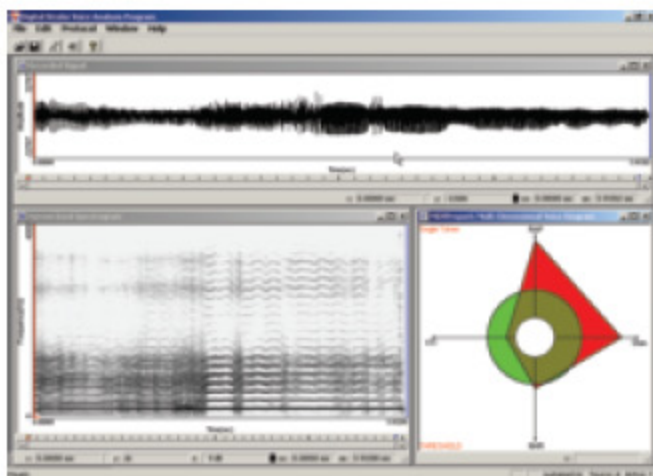


*A montage, automatically generated, presents a quick snapshot of the patient's vocal fold structure and vibratory pattern.*

# Recording Endoscopy Procedures

## Standard Video Formats

Exams recorded on the Digital Strobe can be viewed on the system itself or on other computers. The native format for stored exams on the Digital Strobe is DV-AVI, which provides excellent resolution, is of manageable size, is the preferred format for editing, and can be played back using standard applications such as Windows Media Player. Additionally, exams can be converted to other video formats (e.g., MPG) that are more compressed (smaller file sizes) for insertion into PowerPoint presentations or to be sent electronically to a colleague.



Acoustic assessment of the patient's phonation is provided with the Digital Strobe Voice Analysis Program.

## Five-Hour Video on the Usage of Stroboscopy for Assessing Dysphonia

Authored by Drs. Guy Cornut and Marc Bouchayer, this impressive educational tutorial, consisting of three DVDs (and an eBook on CD), methodically covers all aspects of stroboscopy and its usage in the voice clinic. In addition to its excellent overview of stroboscopy, it presents some 125 cases covering an expansive range of disorders.

## Digital Strobe Voice Analysis Program (DSVAP)

This software is a subset of the acclaimed KayPENTAX Multi-Dimensional Voice Program (MDVP) used by many speech pathologists for the acoustic assessment of voice. DSVAP is designed for the otolaryngologist who wishes to obtain a few acoustic parameters and a high-fidelity voice recording on patients for pre- and post-treatment comparisons.

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*The Digital Strobe is an unparalleled endoscopy imaging platform with many features that enhance clinical efficiency.*

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Digital Strobe software generates a convenient report containing selected stills and a summary of key exam findings.

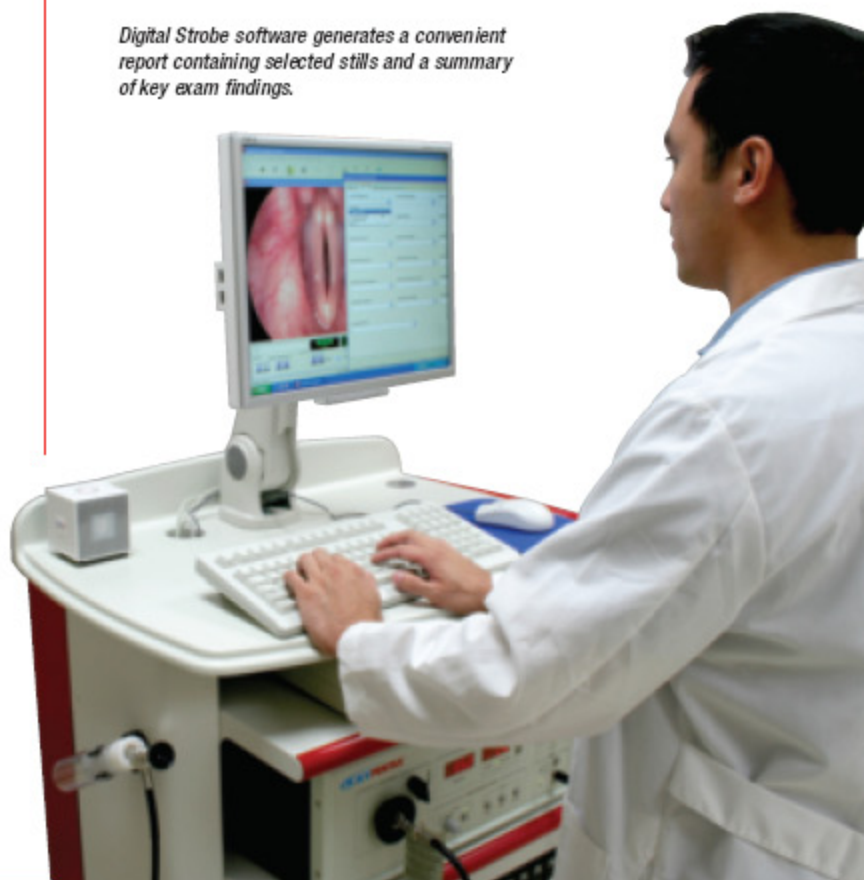
## Valuable Extras Provided with the Digital Strobe

### Video Viewer

The Video Viewer is a software program that allows Digital Strobe exams to be reviewed on other computers in their native format without loss of resolution. This is ideal for a conference room where exams are being reviewed by a team remote from the actual stroboscopy systems. The latest Video Viewer software can be used to play an exam from any generation Digital Strobe system.

### Database of Stroboscopic Recordings of Laryngeal Pathologies (DSRLP)

Assembled at a leading voice clinic, DSRLP is a collection of some 80 stroboscopic recordings covering an extensive range of laryngeal pathologies. Multiple examples of each disorder are provided. Each case includes a running speech sample from the patient, and a stroboscopic exam using both flexible and rigid endoscopes. This collection is an excellent resource for students and residents.





## Networking Solutions

A variety of innovative network solutions is available for the latest Digital Strobe system. They provide users with versatile options ranging from a simple and convenient method for viewing exams remotely to more complete integration of exams into a hospital's central data repository. Users can network one or multiple Digital Strobe systems. Since not all facilities have the same video networking needs, KayPENTAX offers multiple solutions. The specific networking products include *endoPortal*, *endoServer*, and the DICOM Compliance Module; various combinations of them may be selected as well. These systems have separate brochures describing their functionality in more detail.

## Complementary Laryngeal Imaging Tools

KayPENTAX offered the first practical black-and-white High-Speed Video System to the voice community in the late 1990s. The latest Color High-Speed Video System (CHSV) adds color, significantly improved resolution, and higher achievable frame rates compared to the earlier system. The Digital Strobe can serve as a computer host for the CHSV. Unlike stroboscopy, CHSV allows observation of vocal fold vibratory characteristics regardless of periodicity (e.g., patients with severe dysphonia). High-speed video is being used increasingly in leading voice clinics as a complement to stroboscopy.

## A Complete Voice Lab

In addition to laryngeal imaging products, KayPENTAX offers a full line of acoustic, aerodynamic, and electroglottographic instruments for the voice lab that are used for comprehensive patient assessment and visual feedback in rehabilitation. As with the KayPENTAX stroboscopy system, these instruments are cited frequently in peer-reviewed articles and are the leaders in their respective product categories.



*The laryngeal pathology database contains exam segments from some 80 laryngeal pathologies. Running speech and stroboscopic assessment are provided on each patient.*

## Customer Support

KayPENTAX is committed to first-rate customer support. It is dedicated to quick response to customers' needs through its toll-free phone support (USA) and a worldwide organization of representatives. KayPENTAX and its affiliates attend some 50 conventions and symposiums annually. At its corporate headquarters, KayPENTAX offers periodic workshops with leading guest faculty and provides an expansive volume of product support and information on its Web site. KayPENTAX also compiles and distributes many educational tools to its customers.

## World Leaders in Speech, Voice, and Swallowing Instrumentation





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