

# Laryngeal Strobe



## MODEL 9400



**The Laryngeal Strobe provides the bright, clear, razor-sharp images needed for reliable analysis of vocal fold structure and motion.**

The Laryngeal Strobe, Model 9400, is the latest version of the acclaimed KayPENTAX stroboscopy light source proven to be an invaluable tool in the assessment of vocal fold structure and vibratory characteristics. New features include the addition of an automatic brightness control mode, a bright LCD display that provides pertinent graphical and numeric information during the endoscopic exam, and a front-panel interface for entering user-selectable settings. As in the previous version of our stroboscopy light source, the 9400 boasts KayPENTAX's unique anti-blinking circuit to provide consistent brightness throughout the patient's entire pitch and amplitude range, superior pitch tracking that quickly locks to the voice fundamental frequency, short-duration strobe light pulse to produce razor-sharp images, and a light-focusing design that provides superior illumination and image quality for stroboscopic exams with both rigid and flexible endoscopes.

### **Front-Panel LCD Display and User Interface**

The new, easy-to-read, front-panel LCD screen has large, numeric displays of fundamental frequency and amplitude of phonation, and graphical displays of audio level and brightness level. User selections for these and other parameters, including brightness detection scheme (Average or Peak), frequency detection input (microphone or EGG), and phase advance (Normal for displaying laryngeal cycle at 1.5 Hz, or Slow for 0.5 Hz), are entered from the convenient front-panel interface. Once configured, these settings can be stored in two different user profiles, for quickly switching between commonly used configurations (e.g., rigid and flexible exam). The LCD display also provides access to useful system information, such as Xenon and Halogen Lamp Usage Data for easier bulb-life management.

### **FEATURES**

- Automatic brightness control adjusts image brightness at various distances from scope tip
- Easy-to-read, front-panel LCD display
- True strobe design provides bright, sharp images
- Anti-blinking circuit provides consistent brightness throughout the patient's entire pitch and amplitude range
- Superior pitch tracking quickly locks to voice fundamental frequency
- Xenon (flashing) and halogen (constant) light sources
- Foot-pedal control of key functions during endoscopic procedures
- Selectable throat microphone or electroglottographic (EGG) input for frequency detection
- Can be used for both stroboscopy and general endoscopy

### **True Strobe Light Pulse**

In order to display the quickly moving vocal folds accurately, the 9400 uses a very fast, short-duration light pulse that illuminates for only 5 microseconds (i.e., 1/200,000 of a second) for every exposure. This very short exposure time produces razor-sharp images at all pitch and amplitude values, because the vocal folds are essentially motionless in this brief instant. This is especially useful for capturing still images that clearly show the vocal fold edges.

### **Superior Pitch Tracking, Consistent Brightness**

The 9400 provides excellent pitch tracking of fundamental frequency over a wide dynamic range. It quickly locks to the voice and accurately tracks changing fundamental frequency from the loudest to softest voice, from 60 Hz to 1000 Hz. This is critical in determining the timing of light flashes to produce the strobe image. In addition, the 9400 contains a special anti-blinking circuit that regulates this timing and provides consistent brightness throughout the patient's entire pitch and amplitude range.

### **Separate Trigger and Acoustic Microphone Inputs**

Two microphones are provided with the 9400: a throat microphone coupled to the patient's neck for fast, reliable pitch extraction; and an acoustic microphone set at a fixed distance from the patient's mouth to record patient phonation and track amplitude (dB SPL) during phonation. The 9400 can also use an electroglottographic (EGG) input for pitch extraction in place of the throat microphone. The EGG can be purchased separately, as an option, from KayPENTAX.

### **Computer Interface**

The Laryngeal Strobe, Model 9400, can be integrated with the KayPENTAX Digital Video Capture Module as part of a complete Digital Video Stroboscopy System, or it can be used in a more basic stroboscopy system without a computer. In the complete system, the 9400 computer interface communicates the frequency, amplitude, and phase advance (Normal or Slow) information to be included in the exam recording. When the 9400 is used in a basic system without a computer, a video overlay of frequency and amplitude data can be enabled.

### **Control of Camera**

When integrated as part of the KayPENTAX Digital Video Stroboscopy System, the 9400 works with the computer to download the proper camera settings, including White Balance, when switching between strobe (xenon) and constant (halogen) light. Separate files are created and downloaded for each endoscope for optimal and consistent image quality.

### **Field-Replaceable Bulbs**

The xenon and halogen assemblies in the 9400 are specifically designed for easy bulb replacement. However, technical assistance is available to users should questions arise during bulb replacement.

### **Complete Stroboscopy and Endoscopy Systems**

The Laryngeal Strobe, Model 9400, is an integral part of the KayPENTAX Digital Video Stroboscopy System, available in standard-definition and High-Definition (HD) versions. KayPENTAX offers a complete line of components and systems to meet all of your stroboscopy and general endoscopy needs, including a full line of flexible endoscopes—renowned for their superior image quality—for the ENT or speech clinic.

#### **Laryngeal Strobe Specifications**

Light Sources:	Xenon (strobe) and halogen (constant)
Halogen Lamp:	150 watts
Xenon Lamp:	120 watts at 60 Hz
Default Strobe Rate:	60 Hz/50 Hz, selectable
Frequency Range:	60 Hz – 1000 Hz
Operating Modes:	Normal (1.5 Hz) or Slow (0.5 Hz)
Power:	100 – 240VAC (3.0 Amps max)
Dimensions:	7.6" (19.2 cm) H 18.5" (47 cm) W 18" (45.7 cm) D
Weight:	25 lbs (11.3 kg)

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



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