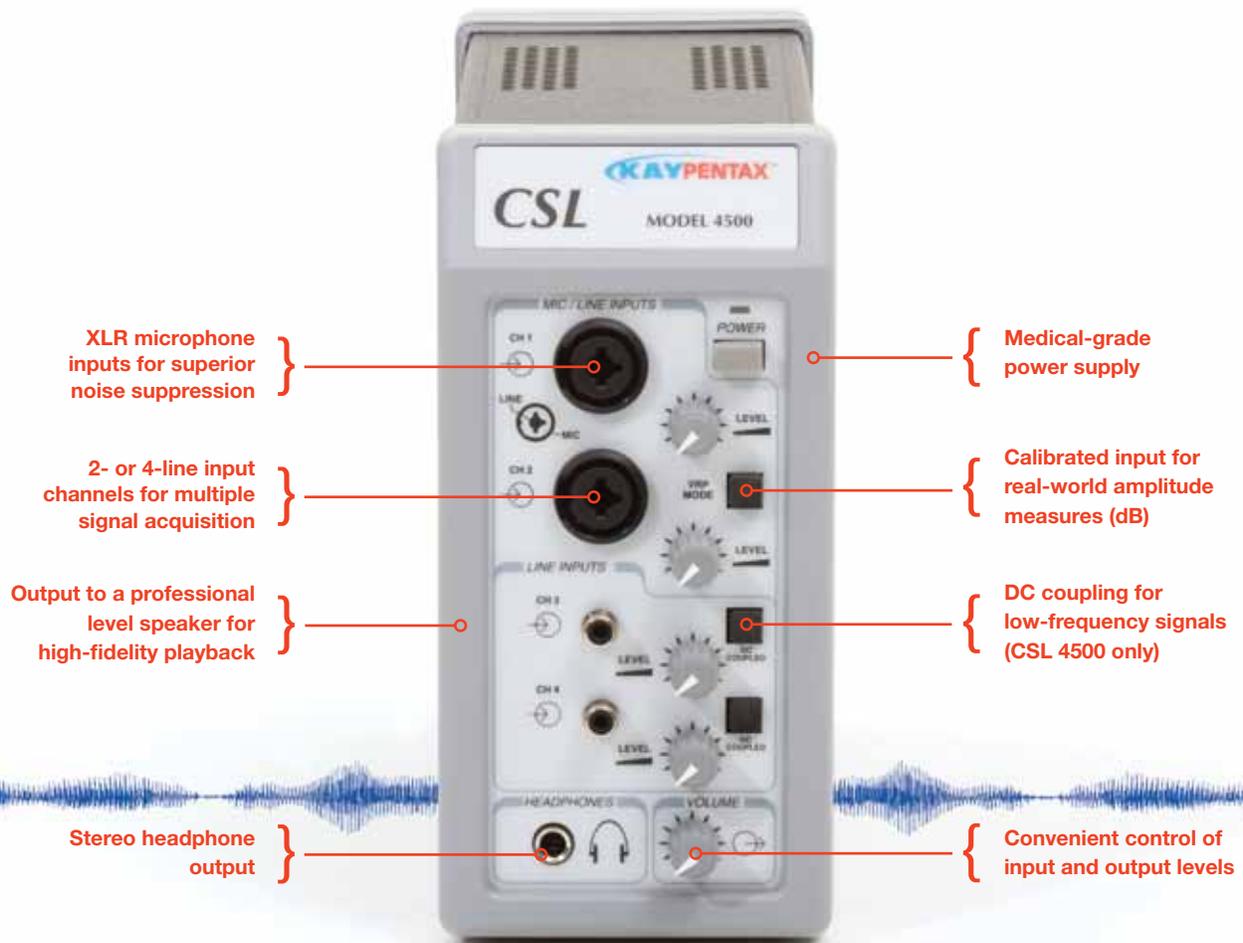


# Computerized Speech Lab

Model 4500 and 4150B

(CSL)

The Leading Hardware/Software System  
for Speech and Voice Professionals



**KAYPENTAX**<sup>®</sup>

World Leaders in Speech, Voice, and Swallowing Instrumentation

## Computerized Speech Lab (CSL™)

is a highly advanced acoustic analysis system with robust hardware for data acquisition, complemented by the most versatile suite of software available for speech analysis, teaching, research, voice measurement, clinical feedback, acoustic phonetics, and forensic work.

### Key Features:

- A proven and reliable speech acquisition and analysis platform with more than 20 years of clinical and research use
- Offers signal-to-noise performance typically superior to generic sound cards
- Incorporates design features for accurate voice signal capture such as use of low-latency ASIO drivers, high gain preamplification, and anti-alias filtering
- Meets the exacting hardware standards defined by the National Center for Voice and Speech (NCVS)

## Engineered for Diverse Needs

KayPENTAX offers two CSL models, 4500 and 4150B, to accommodate diverse budgets and requirements. Both are state-of-the-art input/output audio devices that meet the exacting specifications for reliable acoustic measurements in the clinic and research lab. The key comparative features of the two models are as follows:



### Is acoustic hardware really necessary?

Free and low-cost acoustic analysis software that works with a computer's sound card is available, but sound cards are not designed with the specific needs of speech and voice analysis in mind. Most are designed to optimize playback, not recording, and the sampling rate of the typical sound card is not precise. Filtering may modify the signal that is captured, and there is commonly crosstalk between channels. Because voice analysis requires the measurement of a very small amount of noise or perturbation, it is critical to have professional-level hardware for signal acquisition. With CSL, the captured signal is truly an accurate representation of the voice.

<i>CSL 4150B</i>	<i>CSL 4500</i>	<i>What this means:</i>
2-channel input	4-channel input	Four channels provide the ability to collect more signals simultaneously both for research and clinical applications.
AC coupled	AC and DC coupled	AC coupling removes low-frequency components for improved signal quality. DC inputs are used for low-frequency data signals such as EGG.
Sampling rates 8,000 – 50,000 Hz	Sampling rates 8,000 – 200,000 Hz	Higher sampling rates allow for analysis of higher frequency signals for researchers in certain applications (e.g., bioacoustics).

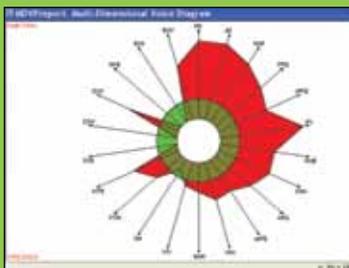


## Powerful Software

The CSL Main Program delivered with the CSL hardware offers extensive acoustic analysis that includes spectrograms, spectral analysis, linear predictive coding analysis, and more. Complementing the CSL hardware and Main Program is a suite of more than 20 software options for clinical assessment, real-time feedback/therapy, linguistics, forensics, and teaching applications. Programs for patient assessment and therapy cover a broad range of communication disorders including voice, motor speech, fluency, and articulation.

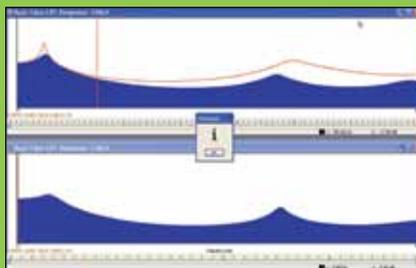
No other acoustic system provides this breadth of application-specific programs, many of which are frequently cited in peer-reviewed articles. The wealth of software options enables clinicians and researchers to tailor a CSL system to their work requirements. Cost-effective software packages are also available for clinical, phonetic, and forensic work settings. Additionally, CSL software includes a variety of databases and educational programs that make it an ideal teaching platform for educators. See the KayPENTAX CSL software options fliers for more information.

### Software Options for CSL



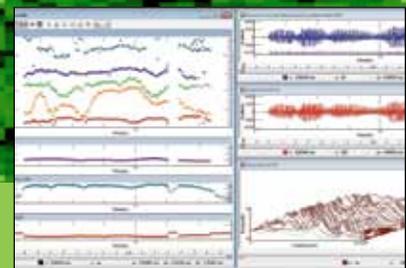
#### Clinical Assessment Applications

- Analysis of Dysphonia in Speech and Voice (ADSV™)
- Multi-Dimensional Voice Program (MDVP™)
- Motor Speech Profile (MSP)
- Voice Range Profile (VRP)



#### Real-Time and Therapy Applications

- Real-Time Pitch
- Real-Time Spectrogram
- Real-Time EGG
- Auditory Feedback Tools
- Sona-Match
- Voice Games



#### Databases and Phonetic Applications

- Disordered Voice Database
- Palatometer Database
- Phonetic Database
- Video Phonetics Program and Database
- Analysis Synthesis Laboratory (ASL)

Stand-alone educational software options that provide an interactive audiovisual environment to help teach basic principles of respiration, speech, and voice are also available.



## Complete System

With the CSL, there is no need to search for the proper connection cable or adapter. Everything you need is included:

- Data acquisition module
- Audio device (interface card)
- Speaker
- Microphone
- Headphones
- Connection cables
- Adapter for EGG input
- CSL Main Program software
- Manual and instructions

## Specifications

CSL has been refined over many years of continuous development to yield a rich set of standard features.

	<i>CSL 4150</i>	<i>CSL 4500</i>
Analog Inputs	2 XLR/phone-type channels	2 XLR/phone-type and 2 phono channels
Coupling	AC	AC or DC (channels 3 and 4 switchable)
Sampling Rate	8,000 – 50,000 Hz	8,000 – 200,000 Hz
Dynamic Range	>90 dB	>90 dB
Frequency Response	5 to 30 kHz (3dB)	Channels 1 & 2: 20 to 88 kHz Channels 3 & 4: AC mode: 18 to 88 kHz Channels 3 & 4: DC mode: low pass roll off at 88 kHz
Digital Interface	AES/EBU or SPDIF format; transformer-coupled	AES/EBU or SPDIF format; transformer-coupled
Software Interface	ASIO and MME	ASIO and MME
Computer Interface	Half-size PCI card: 5" H x 7.4" W x 0.75" D	Half-size PCI card: 5" H x 7.4" W x 0.75" D
Analog Outputs	2 channels: line and speaker, headphone	4 channels: line and speaker, headphone
Physical	4" W x 8.25" H x 12.5" D; 4 lbs 12 oz; 45 watts	4" W x 8.25" H x 12.5" D; 4 lbs 12 oz; 45 watts

For current host computer requirements and operating system compatibility, visit the KayPENTAX Web site at [www.kaypentax.com](http://www.kaypentax.com).

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



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