

world leaders in  
voice and speech  
instrumentation  
swallowing



**Computerized Speech Lab (CSL), Model 4500**

**KAY**

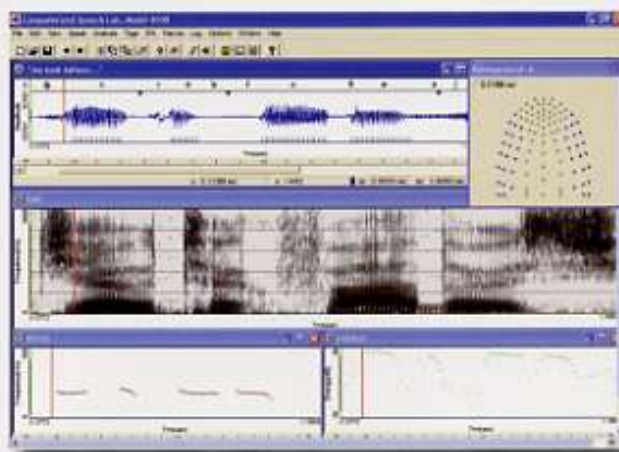
Computerized Speech Lab (CSL)

# Model 4500

The Computerized Speech Lab (CSL) is Kay's most advanced speech analysis system with uncompromised specifications and performance. Indeed, CSL boasts numerous citations in professional peer-reviewed journals (e.g., see Kay in the News at [www.kayelemetrics.com](http://www.kayelemetrics.com) for a partial list) for its broad range of application in analyzing speech and voice. Since its introduction a decade ago, CSL has become the instrument of choice for clinicians at leading medical centers and for university researchers. CSL is a complete hardware and software system. The companion CSL software and a rich array of speech analysis and biofeedback software packages are described in separate literature.

## CSL Hardware Description

The latest generation CSL hardware, Model 4500, is an input/output recording device for a PC, which complies with the rigorous specifications and features needed for reliable acoustic measurements\*. It includes a state-of-the-art PCI hardware interface, using ASIO drivers for low latency (i.e., deterministic responsiveness) between the external module and the host computer, as well as a wealth of features ideal for speech analysis. Unlike systems built around generic, plug-in, multimedia sound cards, which were designed primarily for sound output, CSL, with its fully integrated hardware and software, is well tailored for sound input and measurement in the most exacting speech-processing applications. CSL offers input signal-to-noise performance typically 20-30dB superior to generic, plug-in sound cards.



*\*The National Center for Voice and Speech (NCVS) brought leading voice scientists together at a workshop (Denver, February 1994) to standardize and improve the acquisition and analysis of voice signals. Professionals interested in voice analysis should read their summary statement, Workshop on Acoustic Voice Analysis, which can be found at [www.ncvs.org](http://www.ncvs.org). NCVS made recommendations about the procedures, methods, and technology related to the acquisition and analysis of voice. Kay's Web site also includes a summary of these demanding recommendations and CSL compliance with them.*

# The Leading Hardware/Software System for Speech and Voice Professionals



**KAY**



- Leading system for speech and voice analysis
- Extensive standard and optional software
- 24-bit sampling to 200kHz
- XLR inputs
- Four-channel input
- Calibrated Voice Range Profile input setting
- DC and AC coupling
- NCVS compliance

#### Software Options for CSL, Model 4500

- ~ Applied Speech Science for Dysarthrias
- ~ Auditory Feedback Tools
- ~ Disordered Voice Database and Program
- ~ Games
- ~ Motor Speech Profile
- ~ Multi-Dimensional Voice Program
- ~ Palatometer Database
- ~ Phonetic & Perception Simulation Programs
- ~ Phonetic Database
- ~ Real-Time EGG Processing
- ~ Real-Time Pitch
- ~ Real-Time Spectrogram
- ~ Respiration, Phonation and Prosody Simulation
- ~ Signal Enhancement Program
- ~ Sona-Match
- ~ Speech Articulation: Animation of Muscle Vectors
- ~ Synthesis (ASL)
- ~ Video Phonetics Program and Database
- ~ Voice Range Profile



#### Abbreviated Specifications

**Analog Inputs:** 4 channels: two XLR and two phono-type, 1mV-20V peak-to-peak, switchable AC or DC coupling, calibrated input, digital attenuator: 0-52dB, 24-bit A/D, Sampling rates: 8000-200kHz, Dynamic range: >92dB, Frequency Response (AC coupled): 20 to 22kHz  $\pm$  0.05dB at 44.1kHz

**Digital Interface:** AES/EBU or S/P DIF format, transformer-coupled

**Software Interface:** ASIO and MME

**Computer Interface:** PCI (version 2.2-compliant), PCI card; 5.0" H x 7.4" W x 0.75" D (half-sized PCI card)

**Computer Requirements:** Win 98/ME/XP/NT/2000, one free PCI slot, >800MHz Pentium III

**Analog Output:** 2-channels, line and speaker, headphone output

**Physical:** 4" W x 8.25" H x 12.5" D; 4 lbs. 12 oz., 45-watts; speaker, and microphone (Shure SM-18 or equivalent, XLR-type)

CSL has been refined over ten years of continuous development to yield a rich set of standard features for speech analysis for teaching, research, voice measurements, clinical feedback, acoustic phonetics, second language articulation, and forensic work. Nineteen optional programs and databases target specific speech applications. CSL provides the necessary features and specifications for efficient, easy, accurate, and repeatable recording and measurement of speech signals for speech professionals. For complete specifications and more information about Kay's acoustic and other products, visit our Web site.

# KAY

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