

## Visi-Pitch and Computerized Speech Lab (CSL™)

*Medical Instrumentation for Speech and Voice Clinicians and Researchers*

**Validated** clinical measurement

**Evidence-based** protocols

**Real-time** feedback for therapy





## Measure with confidence

The newly redesigned Visi-Pitch, KAY3950c, and Computerized Speech Lab, KAY4500b, (CSL™) are the next-generation of the products that set the standard in voice and speech capture and analysis. Developed and manufactured as medical devices,<sup>1</sup> Visi-Pitch and CSL are the products of choice for a clinical setting.

### Clinically Validated

- Used for more than 30 years of clinical research, the Visi-Pitch hardware and software solution is used in the leading voice clinics around the world for clinical assessment and treatment of speech and voice.
- With added functionality for researchers, the CSL is an essential tool for collecting quantitative objective data for speech and voice research via well-established methodologies.
- CSL and Visi-Pitch acoustic software use analysis algorithms that have been proven by numerous peer-reviewed studies to contribute to clinicians' understanding of phonatory behavior.



A USB interface on the new Visi-Pitch 3950c supports use with laptop computers and provides easy setup.

### The Key to Reliable Results

Designed to comply with industry recommendations, PENTAX Medical acoustic hardware offers a level of confidence during signal acquisition that is not available in free or low-cost acoustic software. Its precise sampling rates ensure no alteration of the signal during capture. This allows for the measurement of even the smallest amount of noise or perturbation in the voice, which is critical for accurate and repeatable results.

### A Complete Solution: Measure, Assess, Document, Treat



Optimized signal acquisition enables accurate input



Validated measures and algorithms



Normative data for comparison of performance



Real-time auditory and visual feedback for acquisition of therapy goals

## Clinical Software Modules

Select Visi-Pitch for the full suite of clinical software (Voice Range Profile [VRP] sold separately) or choose CSL and add to the included Computerized Speech Lab (CSL) Main Program only the software modules you need.

### ASSESSMENT MODULES

5168	iCAPE-V: Consensus Auditory Perceptual Evaluation of Voice	Capture patient tokens and document your perceptual assessment
5109	ADSV: Analysis of Dysphonia in Speech and Voice	The new standard in voice quality assessment using cepstral measures
5105	MDVP: Multi-Dimensional Voice Program	Clinically validated voice quality analysis of sustained phonation
5141	MSP: Motor Speech Profile	Protocol driven assessment of common motor speech tasks
4326	VRP: Voice Range Profile	A phonetograph of frequency and amplitude range for singers

### REAL-TIME AND FEEDBACK MODULES

5121	Real-Time Pitch	Evaluate and train on amplitude, fundamental frequency, intonation, and timing
5129	Real-Time Spectrogram	A classic display of acoustic signal with protocols for patient feedback
5127	Sona-Match	Real-time display of formants used for articulation training
5167B	Voice Games	10 real-time games to reinforce typical speech therapy tasks
3506	Auditory Feedback Tools	Research-based auditory feedback for stuttering and other therapy

## Contributes to Acquisition of Therapy Goals

Visi-Pitch and CSL support real-time display of speech and voice signals (frequency, amplitude, formants, etc.), and playback of acoustic samples that can be used to offer valuable feedback to patients. Studies have shown that adding feedback during speech therapy can improve patient progress and accelerates patient acquisition of therapy goals.

## Evidence-Based

The Visi-Pitch and CSL suite of software is designed to comply with industry recommendations<sup>2</sup> for measures of patient performance and include normative data for comparison.



### Protocols and measures include:

- Calibrated Sound Pressure Level (SPL) for measure of habitual amplitude and range.
- Habitual fundamental frequency, range, and standard deviation.
- Cepstral-based voice quality measures including Cepstral Peak Prominence (CPP) of vowels and speech and the validated Cepstral Spectral Index of Dysphonia (CSID) measure.

# Specifications

	<b>Visi-Pitch, KAY3950c</b>	<b>Computerized Speech Lab, KAY4500b</b>
Inputs	2 XLR phono-type channels	2 XLR phono-type and 2 phono
Computer interface <sup>3</sup>	USB	PCI Express card
Coupling	AC	AC or DC (channels 3 and 4)
Sampling Rate	8 – 48 kHz	8 – 200 kHz
Frequency Response	5 to 24 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 88kHz
Dynamic Range	>90 dB	>90 dB
Gain	Adjustable or fixed	Adjustable or fixed
Microphone	Shure SM48-LC: Dynamic Cartioid, 55 – 14000 Hz	Shure SM48-LC: Dynamic Cartioid, 55 – 14000 Hz
Speaker	JBL Pro Model Control 1 Pro	JBL Pro Model Control 1 Pro
OS Compatibility	Windows 10	Windows 10

## Notes:

1. Complies with a quality management system for medical devices in accordance with ISO 13485:2016.
2. Rita R. Patel, Shaheen N. Awan, Julie Barkmeier-Kraemer, Mark Courey, Dimitar Deliyiski, Tanya Eadie, Diane Paul, Jan G. Švec, and Robert Hillman. "Recommended Protocols for Instrumental Assessment of Voice: American Speech-Language-Hearing Association Expert Panel to Develop a Protocol for Instrumental Assessment of Vocal Function American Journal of Speech-Language Pathology, Vol 27, Issue 3, Aug 2018 p. 887-905.
3. The Visi-Pitch is compatible with Laptops and PC's running Windows 10. The CSL requires a full size PC that can accommodate a full-height PCIe card.

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