SNORS+ / System Overview Multiparameter Speech Workstation v.6

SNORS+ is a clinical instrument for use in speech therapy and assessment. It incorporates custom software, running under Windows 95/98[®], and dedicated hardware. SNORS+ is a multiparameter instrument, incorporating the Kent *SNORS* anemometry system, the Kent *Linguagraph* electropalatography system and the *Laryngo-graph*[®] electroglottograph. SNORS+ is built around a simple base unit, which enables the optional connection of the various instruments to the computer's data acquisition card.



At the same time, speech sounds are captured, using a sound card, allowing synplaychronous back of the recorded sound. Video images can also be recorded, via 2 framegrabber card, to provide synchronous video playback.

SNORS+ allows simultaneous assessment of five important pa-

rameters of speech production, in real-time. Parameters can be displayed as trend waveforms over time, or as 2-D dynamic displays. Additionally, the detailed speech and Laryngograph[®] Lx waveforms can be viewed, and spectral analysis can be performed on the speech outcome.

TREND CHANNELS AVAILABLE

- Nasal speech intensity
- Oral speech intensity
- Combined speech intensity
- Acoustic nasalance
- Nasal airflow
- Oral airflow
- Combined airflow
- Aerodynamic nasalance
- Aerodynamic ratio
- Voicing (Lx) intensity
- Fundamental frequency
- Closed quotient
- Alveolar tongue-palate contact
- Palatal tongue-palate contact

- Velar tongue-palate contact
- Left tongue-palate contact
- Centre tongue-palate contact
- Right tongue-palate contact
- Tongue contact balance
- Tongue contact centre-of-gravity
- Tongue contact weight

2-D DISPLAYS AVAILABLE

- Tongue-palate contact (EPG)
- Video image
- Bi-directional Bar

WAVE DISPLAYS AVAILABLE

- Speech waveform (Sp)
- Laryngograph waveform (Lx)

Laryngograph Ltd.



1 Foundry Mews, London, NW1 2PE Tel: +44 (0)20 7387 7793 Fax: +44 (0)20 7383 2039 E-mail: lx@laryngograph.com www.laryngograph.com

SPEECH ANALYSIS DISPLAYS AVAILABLE

- FFT
- LPC
- Spectrogram

SPEECH PARAMETERS ASSESSED

- Speech Outcome
- Respiration
- Voicing
- Velopharyngeal closure
- Tongue-palate contact

An *Auxiliary channel* is also available, allowing connection of a suitable additional instrument.

REAL-TIME DISPLAYS – THERAPY (BIO-FEEDBACK)



ANALYSIS DISPLAYS - ASSESSMENT AND MEASUREMENT OF OUTCOME





SNORS+ is designed specifically as a **clinical** system. It is patient and clinician friendly, having a straightforward user interface, but more powerful, advanced features are available for specialist users and researchers.

SNORS+ is also a **modular** system. Whether a simple airflow system or a full multiparameter workstation is required, operation involves the same, logical user interface.

SNORS+ is an anemometer or an electropalatograph or an electroglottograph or a speech analysis system – or all of these, and more.

Developed by Paul Sharp and Steve Kelly, Medical Electronics Research Group, Kent University in collaboration with Alison Main, Speech & Language Therapist, East Kent Hospitals NHS Trust; Denise Dive, Specialist Speech & Language Therapist, Queen Victoria Hospital NHS Trust (East Grinstead); Graham Manley, Senior Dental Surgeon, East Kent Community NHS Trust; and many others.