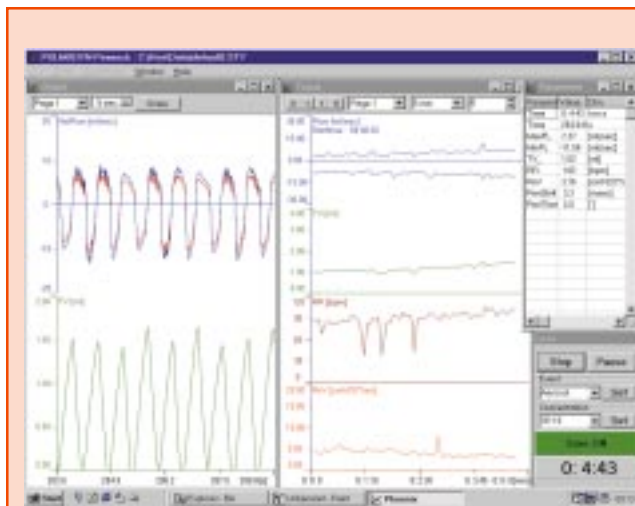
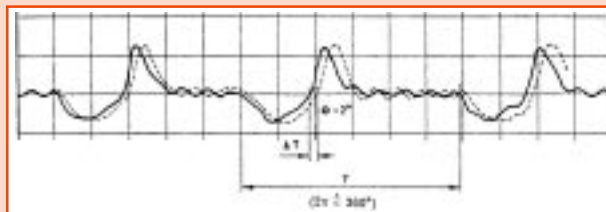


PULMODYN[®] Pennock Wfor Microsoft[®] Windows[®] 95/98/NT



Data acquisition software for the investigation of bronchospasmolytically active substances on conscious animals in the double chamber plethysmograph box.



The formula according to Pennock et al. (1979) is as follows:

$$\tan \Theta = \omega \times R \times C$$

Θ = Phase Displacement

$\omega = 2\pi \times$ Respiration Rate f

$R \times C$ = Time Constant of the Respiratory System

$C = V/p =$ Thoracic Gas Volume (V) / ($P_{atm} - 47\text{mmHg}$)

The specific airway resistance is therefore obtained as:

$$R \times V = (P_{atm} - 47) \times 13,6 \times \frac{\tan \Theta}{\omega} \quad [\text{cmH}_2\text{O}]$$

The phase displacement is measured at the end of inspiration on the steep change over to the expiratory phase.

This software was especially developed for the investigation of bronchospasmolytically-active substances on conscious animals. In this experiment the awake animal is placed into a double chamber plethysmograph box Type 855 and is restricted so that the head protrudes into the front chamber. The neck is sealed with a soft diaphragm. The nasal air flow is measured in the front chamber, the thoracic respiratory flow in the rear chamber. Both measurements are made with wire-mesh measuring screens and differential pressure transducers. There is a phase shift between the two respiratory flows from which the PULMODYN PENNOCK software calculates the specific airway resistance according to PENNOCK. Data acquisition covers the following signals: pulmonary air flow in the nasal chamber, pulmonary air flow in the thoracic chamber. From the flow signal of the thoracic chamber the following parameters are calculated: respiration rate, tidal volume, maximal inspiratory flow, maximal expiratory flow.

From the phase shift between nasal and thoracic flow the following parameters are calculated: phase shift and specific airway resistance. During data acquisition all acquired signals and derived parameters can be displayed on the screen.

The system covers eight channels. This makes it possible to experiment simultaneously on 4 plethysmograph boxes. All 8 signals are sampled at 1 kHz. This means that each channel is measured 1000 times per second, or measurements on each channel are made once every millisecond. This permits measuring phase shifts of some milliseconds and calculate from this delay the specific airway resistance.

The Software Receives the Following Signals from up to 4 Plethysmograph Boxes:

- Airflow from the Nasal Chamber
- Airflow from the Thoracic Chamber

Optional:

- Blood Pressure
- ECG

From these signals the software calculates the following parameters online:

From the Pulmonary Air Flow signals:

- Respiration Rate (RR)
- Peak Inspiratory Flow (PIF), Peak Expiratory Flow (PEF)
- Tidal Volume (TV)

Optional:

- IT (Inspiratory Time), ET (Expiratory Time), AT (Apnea Time), TT (Total Time)

From the Phase Shift between Nasal and Thoracic Flow:

- Phasic Shift in msec (PenSift)
- Specific Airway Resistance (Res)

Optionally from Blood Pressures:

- Systolic, Diastolic, Mean Pressure
- Heart Rate

Algorithm ECG:

- Heart Rate

Catalog No.	Product
CGS 8226.69	Software PULMODYN 'PENNOCK'
CGS 8227.69	HSE Data Acquisition Hardware PLUGSYS Version
CGS 8228.69	HSE Data Acquisition Hardware Stand Alone Version
Descontinuado CGS 8229.69	Algorithm Advanced Pulmonary Flow IT, ET, AT, TT
Descontinuado CGS 8230.69	Algorithm ECG RR-I, HR