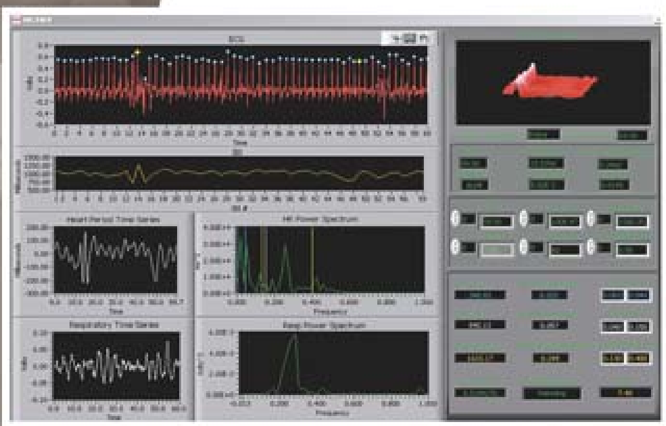
Lafayette Instrument

PHYSIOLOGICAL RECORDING & BIOFEEDBACK CATALOG

DataLab 2000 System - Page 3

MindWare Software - Page 10



Schuhfried Biofeedback - Page 28

Instrumentation for Life Science Professionals

6.26.03

Contents

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Physiological Recording and Biofeedback Systems

Lafayette Instrument Company, Inc., is pleased to provide systems to support your education and research requirements. We are also pleased to introduce MindWare Technologies Ltd. and their specialized data analysis modules. By using our DataLab 2000 for computer-based data acquisition and MindWare's data analysis tools, you will discover a system that will accommodate your research and technology needs. The MindWare tools include analysis modules for Heart Rate Variability, Impedance Cardiography, Electroencephalogram, Electromyography, Blood Pressure and Electrodermal Activity.

We have also expanded the Autogenics biofeedback instrument product line. We have added three new instruments: two for EEG (an Alpha-Theta Trainer and a neurofeedback system) and one dual channel EMG monitor. The Schuhfried Biofeedback system software has been updated with additional contextual help and added data analysis and reporting.

Our DataLab 2000 physiological recording system is robust, yet flexible enough to perform a researcher's most demanding tasks. The DataLab 2000 system is used in general physiology, biology, psychophysiology and other life science studies. Our system includes easy-to-use software that supports on-line acquisition and a number of other data analysis tools. Because there is no programming required, you can begin acquiring data immediately. By adding our Interactive Laboratory Web CD, you can have a complete system from experiment instructions and scientific background through software analysis of your results. We continually strive to improve our products and provide the tools that you need to succeed.

Thank you for taking the time to explore our Physiological Recording and Biofeedback catalog.

Experience is everything ... let ours work for you!

Respectfully,

Terry Echard
Vice President
Product Manager, Life Sciences

IF YOU DO NOT FIND THE INSTRUMENTATION OR SOFTWARE THAT YOU NEED, PLEASE CONTACT US WITH YOUR REQUIREMENTS. WE WILL BE HAPPY TO FURTHER ASSIST YOU IN MEETING YOUR NEEDS.

DATALAB 2000 SYSTEM

The DataLab 2000 System - Model 70700

CE

The DataLab 2000 system is a user-friendly, 16-channel computerized recording and data acquisition system. It has been designed for educators and researchers in the life science fields to aid in the recording and analysis of physiological and physical parameters.

The basic modules of the DataLab 2000 system are:

- DataLab 2000 General Purpose Interface Bed Model 70701
- Data Acquisition Card (PCI) Model 70760
- DataLab 2000 Software Model 70762
- Purdue University Educational Laboratory WebCD Model 70764
- Biopotential Amplifier Model 70702, Basic Amplifier Model 70706, or an assortment of pre-amplifiers
- MindWare Analysis Software Modules

The General Purpose Interface Bed holds up to 16 different amplifiers in any combination. A custom connection cable enables the DataLab 2000 system to be interfaced with any device that is equipped with analog output. The addition of amplifiers and transducers provides DataLab 2000 with the ability to record and analyze the signals of interest. The DataLab 2000 System is modular and therefore is configured to your specific needs.

Maintaining our commitment to high quality standards, the GPI Bed and amplifiers are made of aluminum for long-lasting durability.

For use in education and research. Not intended for Medical diagnostic purposes.

DATALAB 2000 SOFTWARE

DataLab 2000 Software - Model 70762

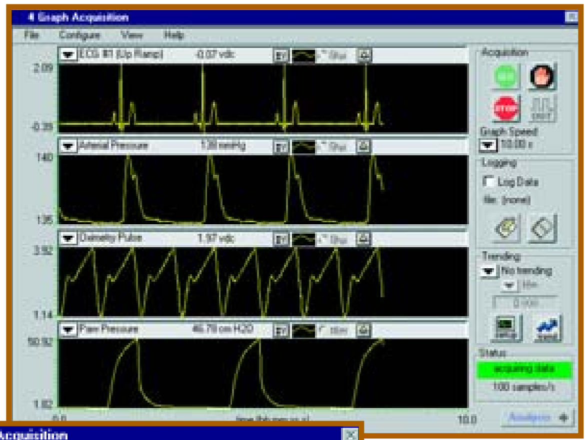
The DataLab 2000 Software is a stand-alone application with ready-to-run data acquisition and data analysis capabilities that can help you save time and money by integrating your personal computer with your physiological monitoring system. There is no programming required, allowing you to begin acquiring data immediately.

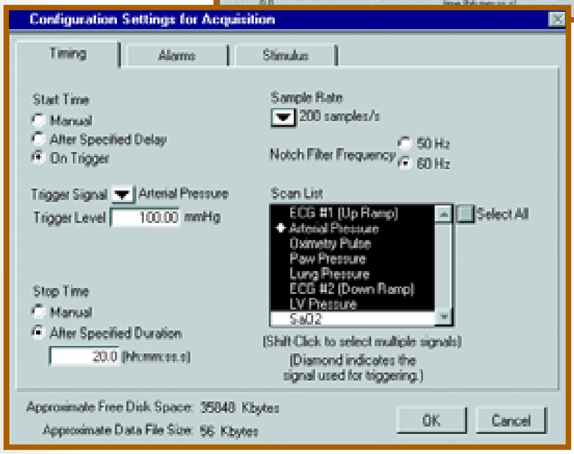
Using Lafayette Instrument Company data acquisition hardware with the DataLab 2000 Software, you can acquire virtually any type of physiological or linear-voltage signal source. While your physiological data is being acquired, the DataLab 2000 Software can save it to disk along with any notations you want to add. Then, using the DataLab 2000 Software, you can open your data file for review and analysis.

In the classroom, students need only to call up the predetermined settings to begin. These predetermined settings can either be selected by the instructor for their own experiments, or they can be attained through the Lafayette Instrument Interactive Web CD Model 70764. This allows the student to focus on science, not software.

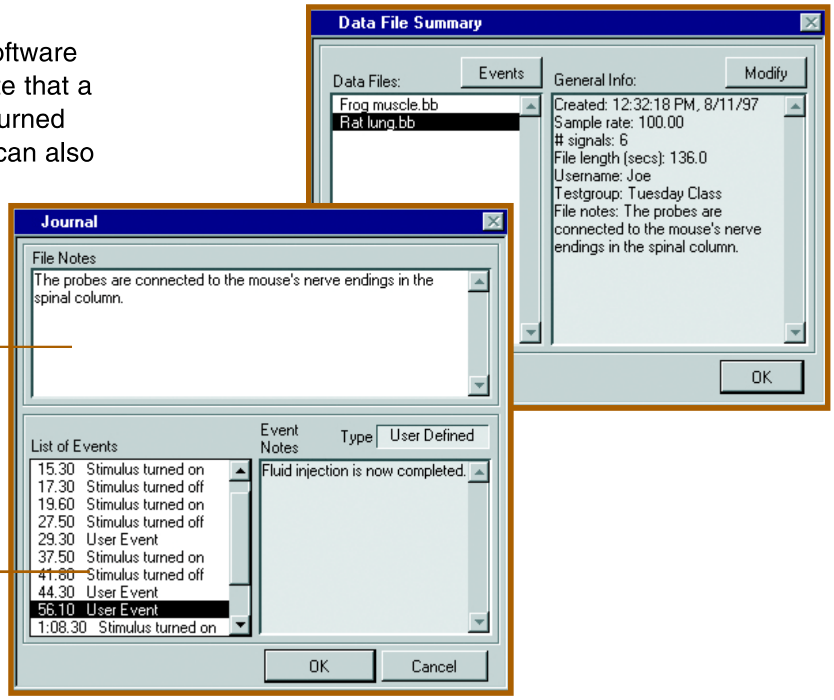
DataLab 2000 Software can help you with your physiological data acquisition and data analysis needs in the following ways:

- **Data Management** - DataLab 2000 Software automatically keeps track of the user name and the date and time each data set was acquired. It has an intuitive data management scheme that allows you to organize your data into testgroups. You can then associate a data set with any testgroup.





- **Automatic Journal Creation** - DataLab 2000 Software automatically logs entries into a journal to indicate that a user changed voltage output stimulus levels, or turned data logging on or off during an acquisition. You can also add your own entries to the journal.



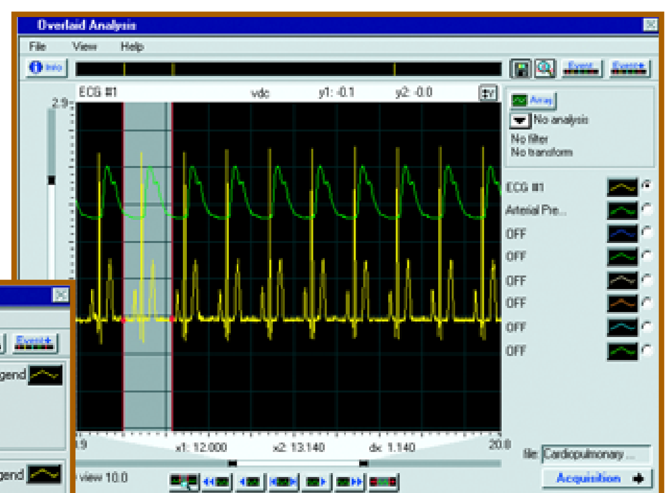
Adds notes with pertinent information

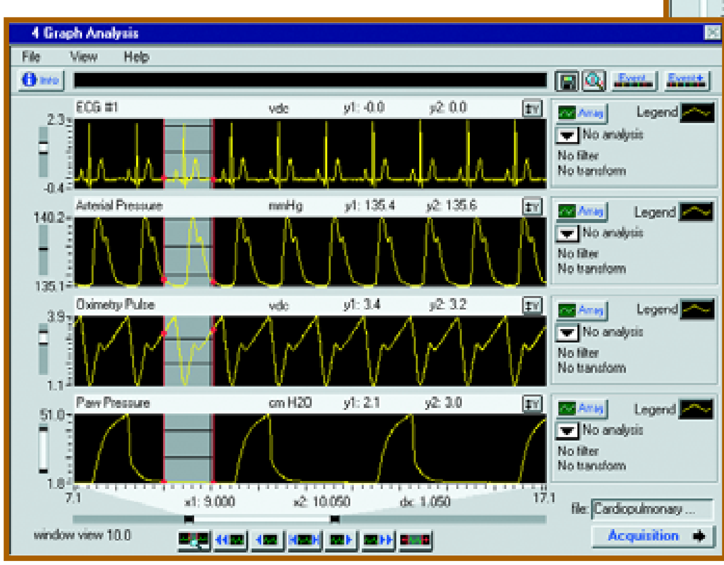
Events listed with respect to the acquisition time

- **File Analysis** - You can use the DataLab 2000 Software analysis views to open, review, and analyze your data. Using the View menu, you can select one of three analysis views:
  - 2 Graph Analysis - View and analyze one or two selected signals in two independent graphs.
  - 4 Graph Analysis - View and analyze up to four selected signals in four independent graphs.
  - Overlaid Analysis - View and analyze up to eight selected signals overlaid on the same graph.

- Perform Histogram, Peak Detect, Power Spectrum and XY analysis on data arrays

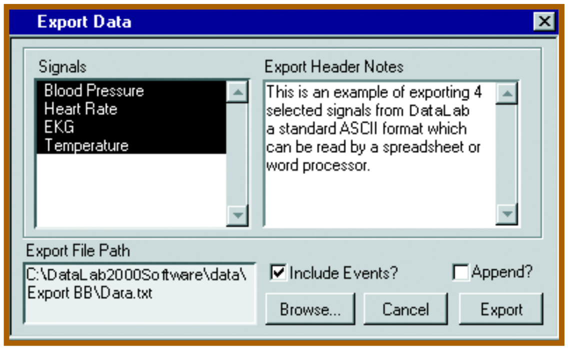
- Apply digital filters and/or transform entire waveforms





DataLab 2000 Software

- **File Exporting -** You can export your data to an ASCII text file or a Microsoft® Excel spreadsheet file for further analysis.



File header with user information and acquisition settings

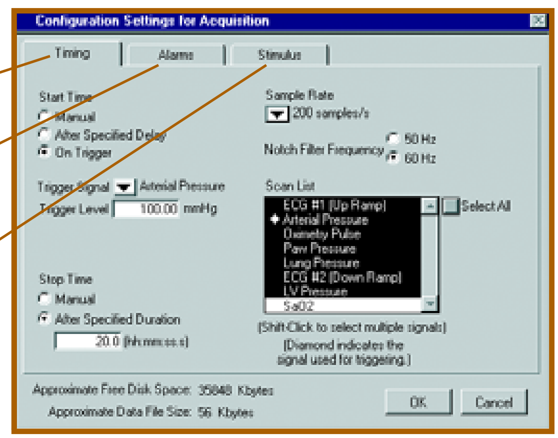
Data labels and parameter settings for each acquired channel

- **Configuration Settings -** DataLab 2000 Software can load, save, and reset your settings. This saves time when multiple users have different configuration settings. Our Interactive Laboratory Web CD (next page) includes predetermined settings for each lab.

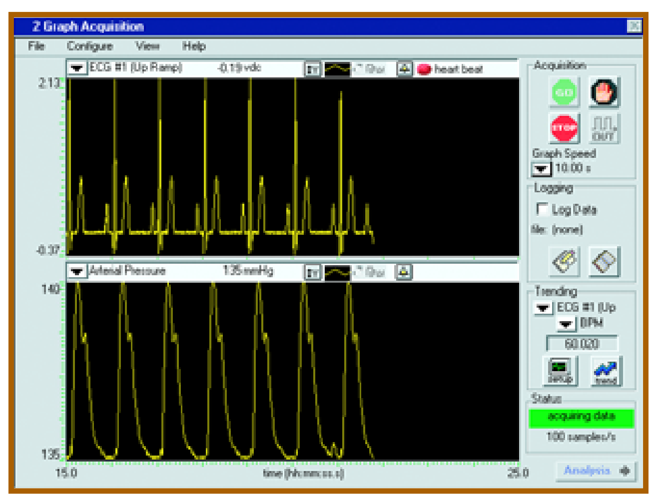
Timing tab: Set acquisition speed channels and triggering

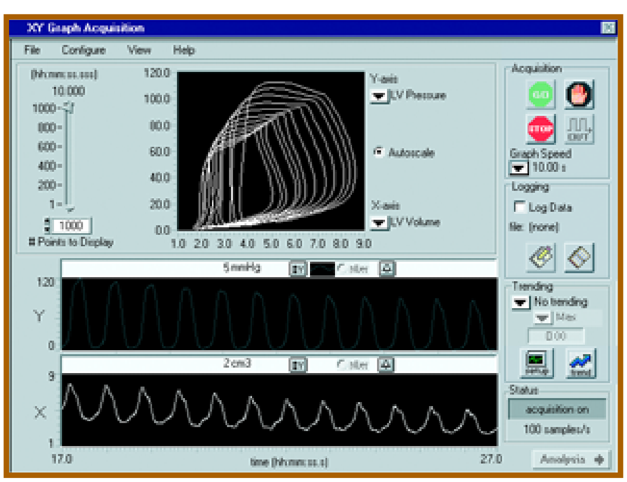
Alarm tab: Set and control threshold alarms

Stimulus tab: Define stimulus profile and control



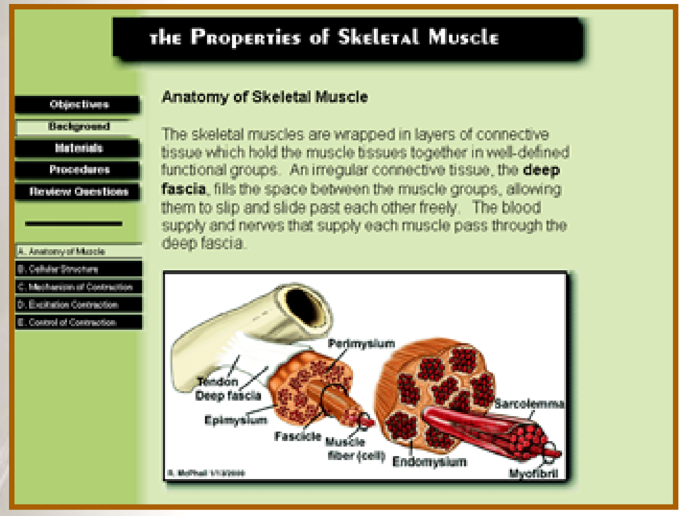
- **Example Data Files for Teaching** - DataLab 2000 Software includes many example data files that you can replay in the classroom without the use of any data acquisition hardware or physiological monitoring equipment. You can also replay your own recorded data sets to show students what your unique signals look like in real time.





INTERACTIVE LABORATORY WEB CD

Lafayette Interactive Laboratory Web CD - Model 70764



The Interactive Laboratory Web CD was developed for Lafayette Instrument Company by the Department of Biological Sciences at Purdue University. The CD contains a collection of laboratories suitable for Advanced Placement Biology and Introductory Biology/Physiology courses. Because the labs are built in HTML format, students can access the information through a school's computer network. If the school has an Internet site, these labs can be added to that site, allowing students to access the lab information at any time and from any place.

Each lab is complete with the information needed to run the data acquisition software and equipment for the lab. The labs have sections that explain how to acquire and analyze data using DataLab 2000 Hardware and Software, instructions for setting up the laboratory equipment, instructions for the construction of any apparatus needed for a specific lab and the scientific background information for each lab.

DataLab 2000 Software can be configured using a *'lab settings'* file that is included on the CD for each lab. These files will configure DataLab 2000 Software to properly record data. This saves the instructor time in setting up each lab, and removes the guesswork. All of the information needed to reconfigure the software and hardware is presented so that the student can gain a better understanding of the system. Laboratory instructors may choose to set up the laboratory equipment and do the preliminary preparation prior to the lab, or they may choose to have the students do this themselves, depending upon the students' capabilities.

This Interactive Laboratory Web CD will run in most browsers, such as Netscape® and Microsoft® Internet Explorer. The Shockwave® plug-in is required to support animations.

Interactive Web CD - Laboratory Objectives

1. Introduction to Data Acquisition
- Become familiar with the terminology used for data acquisition and analysis.
- Be able to describe the functions of the different components of a data acquisition system.

2. Polygraph
- Learn the process of polygraph analysis.
- Be able to design a controlled polygraph experiment.
- Be able to identify variables that can affect polygraph results.

3. The Compound Action Potential
- Observe and record a compound action potential and attempt to identify the specific neurons as their thresholds are reached.
- Calculate the conduction velocity of neurons represented in the compound.

4. Properties of Skeletal Muscle
- Learn about the functioning of muscles.
- Observe and record the effects of voltage and stimulation frequency on the summation of motor units.
- Study muscle fatigue and recovery.

5. Neurosensory Paths & Reaction Time
- Learn about the neurosensory pathways involved in the reaction to stimuli.
- Record and analyze reaction time data using data acquisition software.

6. Respiration
- Determine the tidal volume (TV), inspiratory capacity (IC), expiratory reserve volume (ERV) and the vital capacity (VC) of the subject's lungs in a sitting position.
- Determine the forced expiratory volume (FEV) and the percentage of the total vital capacity exhaled in the first second ($FEV_{1.0}$).

7. Blood Pressure
- Learn the terminology associated with measuring blood pressure.
- Learn to measure blood pressure indirectly.
- Listen to the sounds generated during blood pressure measurement.
- Observe the factors that influence blood pressure.
- Observe the blood pressure response to exercise.

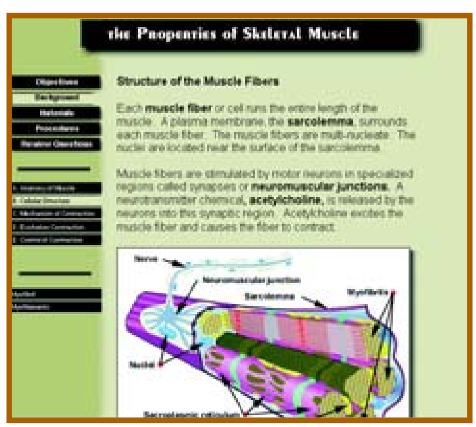
8. Electrocardiograms (ECG) & Heart Sounds
- Learn the relationship between the waves of the ECG and the electrical events of the heart across three different limb leads.

9. Electroencephalogram (EEG)
- Learn to record EEGs.
- Identify and record alpha waves.
- Study how various stimuli alter the brain waves.

10. Properties of Enzymes
- Describe how factors such as enzyme concentration, substrate concentration, temperature and pH affect enzyme function and reaction rate.
- Be able to discuss the molecular mechanisms involved in these effects.

11. Cellular Respiration: Oxygen Utilization
- Determine the respiration rate of germinating peas through the measurement of gas pressure.

12. Photosynthesis: Oxygen Generation
- Determine the rate of photosynthesis in spinach chloroplasts by measuring the change in gas pressure over time.



Interactive Laboratory Web CD Equipment Cross-Reference

General Biology/Physiology Laboratory Exercises

Part No.	Item	1. Introduction to Data Acquisition (human)	2. Polygraph (human)	3. The Compound Action Potential (frog)	4. Properties of Skeletal Muscle (frog)	5. Neurosensory Paths & Reaction Time (human)	6. Respiration (human)	7. Blood Pressure (non computer) (human)	8. Electrocardiograms & Heart Sounds (human)	9. Electroencephalogram (one lead at a time) (human)	10. Properties of Enzymes (potatoes)	11. Cellular Respiration: Oxygen Utilization (peas)	12. Photosynthesis: Oxygen Generation (spinach)	# of components required per station to perform all labs listed above:
70702	Biopotential Amplifier		1	1					1	1				1
70704	Response Time Module					1								1
NA	Reflex Hammer					1								1
70706	Basic Amplifier	1	3		1	1	1		1		1	1	1	3
70708	GSR Preamplifier w/ Cables		1											1
70720	Pressure Transducer		2								1	1	1	2
NA	*Special Apparatus										1	1	1	1
70722	Pulse Plethysmograph for DataLab 2000		1						1					1
70723	3-Lead Electrode Cable								1					1
70724	Heart Sounds Microphone								1					1
70726	Spirometer (Dry Bellows)						1							1
70728	Force Transducer	1			1									1
70732	Switched AC Module	1											1	1
NA	Light Source	1											1	1
70750	Disposable Electrodes (pkg. 100)								1					1
70755	Event Marker Push Button (optional)		1							1				1
70756	Nerve Conduction Electrode			2	1									2
70758	Stimulator Interface Cables			1	1									1
63510DL	Foot Pedal (optional)					2								2
76513NM10	Pneumo Chest Bellows		1											1
76530	Blood Pressure Cuff		1					1						1
76609DL-A	3-Lead EEG Electrode Cap									1				1
76613T	Tension Adjuster				1									1
76632	Stimulator Pin Electrodes				1									1
76506LX	Pump Bulb w/ Pressure Gauge		1					1			1	1	1	1
78021	Stethoscope							1	1					1
82415IS	Isolated Square Wave Stimulator			1	1									1

This is a listing of the main instrumentation required for each laboratory. Most laboratories will make use of additional items commonly found in science lab rooms. All laboratory exercises (except Blood Pressure) require Software, Data Acquisition Card, and General Purpose Interface Bed (Basic Package Model 70700).

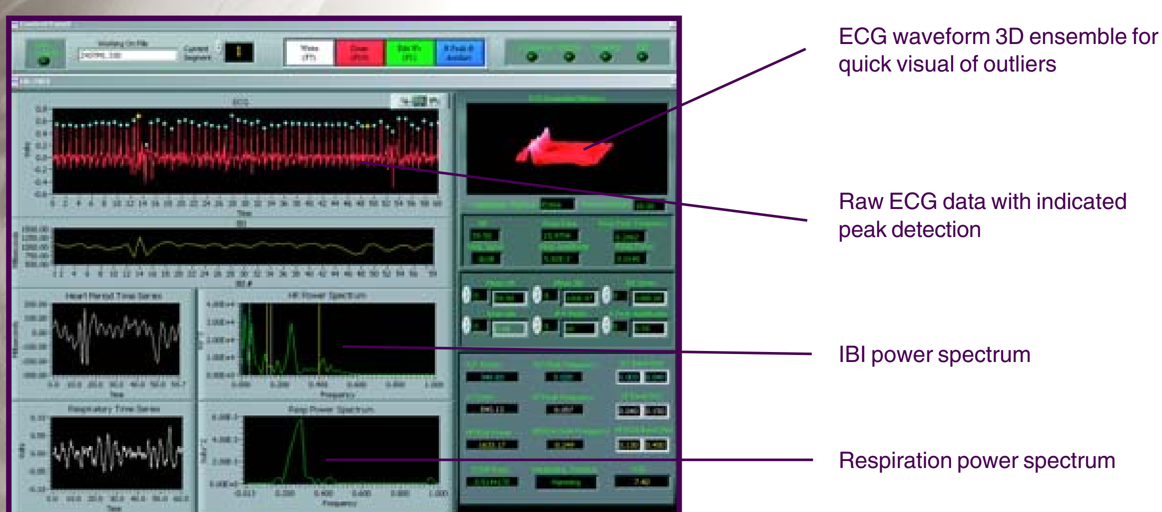
*Description of “special apparatus” given in materials section of the lab from the Interactive Laboratory Web CD.

NA: Not available from Lafayette Instrument. Can be obtained through a third party.

MindWare Technologies Ltd.
Biomedical Signal Processing Software and Systems

Lafayette Instrument is pleased to present MindWare Technologies Ltd., which brings a wealth of experience to solve your complex computer-based data acquisition analysis needs. MindWare has over 40 years of real-world engineering experience in both industry and academia. MindWare plays an active role in the academic and medical research community. They have specialized in developing systems for physiological signal acquisition and data analysis. The MindWare analysis software modules can be added to any DataLab 2000 system to provide sophisticated analysis for specific psychophysiological data acquisition requirements.

The MindWare Technologies family of signal processing software provides life science researchers with powerful, fast and easy-to-use tools for the processing of many common physiological signals. The MindWare signal processing applications work directly with native DataLab 2000 files, Biobench™ format files and many others. All processed results and statistics are written directly into a Microsoft® Excel workbook.



HRV Application

The MindWare applications give researchers the ability to analyze data in user defined time intervals as well as by event. Users have the ability to enable various filters and control most program settings such as peak detection sensitivity and filter bands.

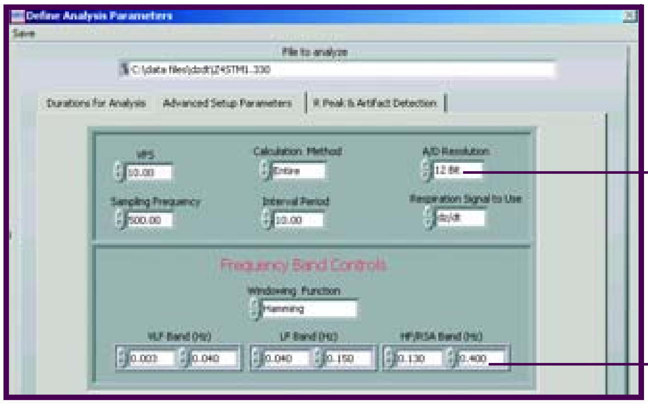
These settings can also be saved as default for later recall. This flexibility gives the MindWare applications the ability to deal with a wide range of signal types from human to animal.

Sample Excel Output

General results information

Segmented data automatically calculated by event or time bins

1	HR/HRV Module ver 2.12		
2	Date	4/8/2003	
3	Time	9:15 PM	
4	File Name	C:\data files\dzdt\Z4STM1.330	
5	Analysis Mode	Time	
6	Segment Time	60.000000	
7			
8	Sampling Frequency	500.000000	
9	Volts Full Scale	10.000000	
10	A/D Resolution	12 bit	
11	60 hz Notch filter	No	
12	Baseline/Muscle noise filter	Yes	
13	VLF Frequency Band	0.003000,0.040000	
14	LF Frequency Band	0.040000,0.150000	
15	HF/RSA Frequency Band	0.130000,0.400000	
16	Windowing Function	Hamming	
17	Resp Signal to use	dz/dt	
18	Calculation Method	Entire	
19	Interval Period	10.000000	
20			
21	Segment Number	1	2
22	Mean Heart Rate	59.49579832	60.36629037
23	RSA	7.398276076	6.650554142
24	Mean IBI	1008.474576	993.9322034
25	Event	0	0
26	Event time	0	0
27	# of R's found	60	60
28	Respiratory Rate	15.97041789	17.98802478
29	Respiratory Amplitude	0.00581578	0.003837396
30	Respiratory Peak Frequency	0.266173631	0.299800413
31	Respiratory Power	0.014485283	0.00468274
32	First ECG Rtime	0.472	60.928



Controls for file and data acquisition types

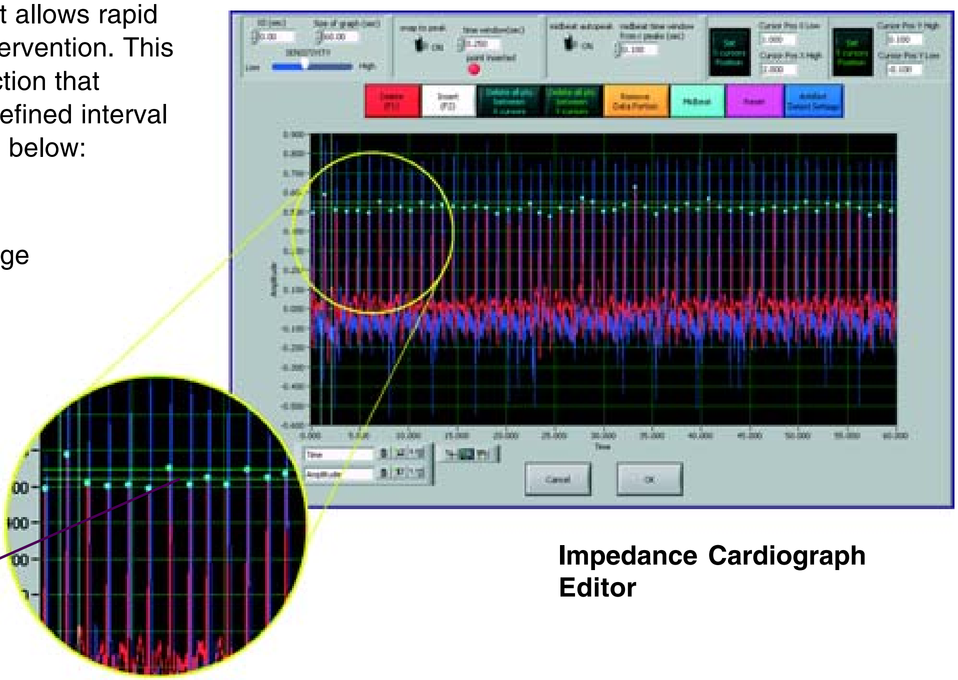
Set desired frequency bands for spectral analysis of inter-beat intervals

Setup Screen

MindWare's sophisticated signal processing and peak detection algorithms greatly reduce the need for manual data editing of artifact and noise. When editing is required, the built in artifact detection algorithms aid the user in marking potential artifact points.

For data that needs editing, the MindWare applications offer a unique graphical editing system that allows rapid editing of data series with minimal user intervention. This editor has an automated snap to peak function that automates peak placement within a user defined interval and many other time saving features listed below:

- Remove a data portion
- Remove points within an X or Y range
- Resize graph, zooming
- Insert Midbeat
- Reset function
- Edited data can be saved



Automated peak detection for easy analysis

Impedance Cardiograph Editor

Heart Rate Variability (HRV) Analysis Software Model 70770

- Calculates VLF, LF, HF/RSA power, HR, respiration rate, IBI series, HR and respiration power spectrums
- User programmable power bands
- User selectable 60 Hertz notch and muscle noise filters
- Dual artifact detection algorithms
- Dynamic auto ranging peak detection
- Edited data can be saved and recalled for later use
- 3D Ensemble R peak plot of ECG
- Interval mode statistics calculation method
- Respiration from chest bellows

Required DataLab 2000 Components:

Acquisition:

- (1) Model 70701 General Purpose Interface Bed
- (1) Model 70760 Data Acquisition Card for Desktop Computer **or** Model 70765 for Notebook Computer
- (1) Model 70762 DataLab 2000 Software **or** Model 70776 MindWare Signal Acquisition Software

ECG:

- (1) Each of the Acquisition components above
- (1) Model 70702 Biopotential Amplifier
- (1) Model 70723 3-Lead Electrode Cable
- (1) Model 70750 Disposable Electrodes

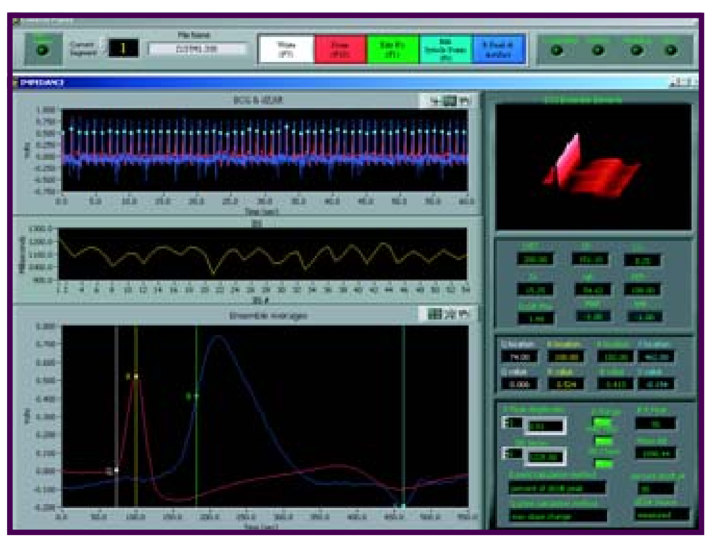
Respiration:

- (1) Each of the Acquisition components above
- (1) Model 70706 Basic Amplifier
- (1) Model 70720 Pressure Transducer
- (1) Model 76513NM10 Pneumo Chest Bellows

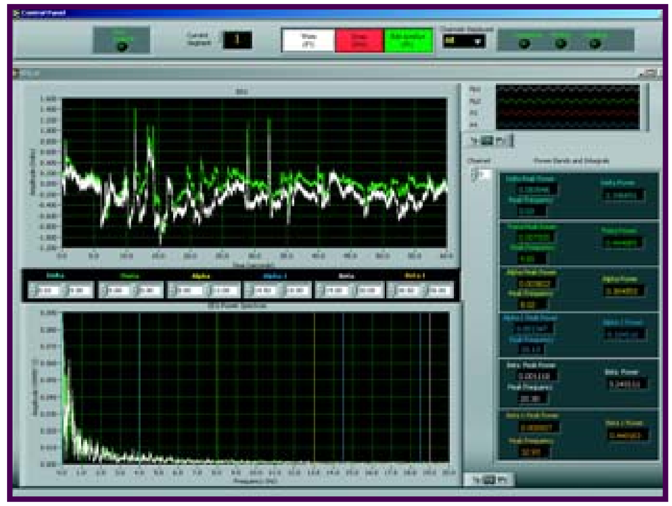
Impedance Cardiography (IMP) Analysis Software Model 70771

- Calculates LVET, PEP, SV, CO, HR, dZ/dt max, Mean IBI, IBI series, number of R peaks
- User selectable Q and B point methods
- Can derive dZ/dt from Zo programmatically
- User selectable 60 Hertz notch and muscle noise filters
- Dual artifact detection algorithms
- Dynamic auto ranging peak detection
- Easy to use graphical editor and Ensemble editor Compatible with Minnesota 304B, HIC-2000, BIOPAC EBI 100C
- 3D Ensemble R peak plot of ECG
- * MAP and TPR

(* when used with corresponding BP data from MindWare BP application)



Electroencephalogram (EEG) Analysis Software Model 70772



- Calculates total power within definable frequency bands, peak frequency, and peak power point
- Easy to use graphical editor for editing eye blink and movement artifact
- User programmable channel names
- User selectable 60 Hertz notch filter
- Can process up to 16 channels of EEG
- User programmable power bands
- Integrates seamlessly with DataLab 2000 to create a 16 channel EEG system

Required DataLab 2000 Components:

Acquisition:

- (1) Model 70701 General Purpose Interface Bed
- (1) Model 70760 Data Acquisition Card for Desktop Computer **or** Model 70765 for Notebook Computer
- (1) Model 70762 DataLab 2000 Software **or** Model 70776 MindWare Signal Acquisition Software

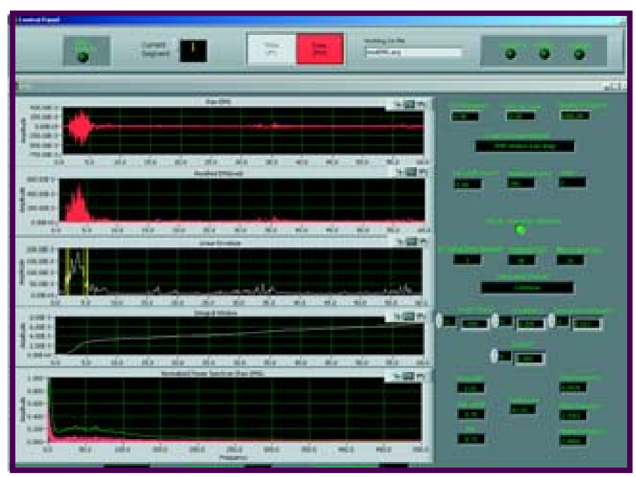
EEG 1 Channel:

- (1) Each of the Acquisition components above
- (1) Model 70702 Biopotential Amplifier
- (1) Model 70723 3-Lead Electrode Cable
- (3) Model 76660 Reusable 8 mm Electrode with Snap Connector
- (1) Model 76660AD 8 mm Adhesive Disk Pack
- (1) Model 76621 Electrode Biogel

EEG Multi-Channel:

- (1) Each of the Acquisition components above
- (5) Model 70702 Biopotential Amplifier
- (1) Model 76610A 10-Lead EEG Electrode Cap
- (1) Model 70746 EEG Electrode Connector Board
- (5) Model 70751B 3-Lead Electrode Cable
- (5) Model 76656SC-BK Black Electrode Lead

Electromyography (EMG) Analysis Software Model 70773



- User programmable linear envelope methods, filter cutoffs, filter order and windowing size
- Calculates power spectrum, mean and median frequency, total power and peak frequency
- User selectable integration methods
- Integrates seamlessly with DataLab 2000 to create a 16 channel EMG system

Required DataLab 2000 Components:

Acquisition:

- (1) Model 70701 General Purpose Interface Bed
- (1) Model 70760 Data Acquisition Card for Desktop Computer **or** Model 70765 for Notebook Computer
- (1) Model 70762 DataLab 2000 Software **or** Model 70776 MindWare Signal Acquisition Software

EMG 1 Channel:

- (1) Each of the Acquisition components above
- (1) Model 70702 Biopotential Amplifier
- (1) Model 70723 3-Lead Electrode Cable
- (1) Model 70750 Disposable Electrodes

EMG 4 Channel:

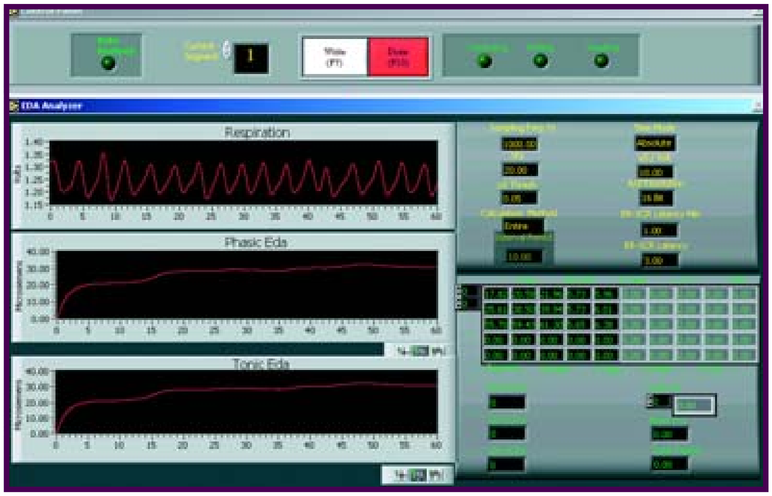
- (1) Each of the Acquisition components above
- (4) Model 70702 Biopotential Amplifier
- (4) Model 70723 3-Lead Electrode Cable
- (1) Model 70750 Disposable Electrodes

Blood Pressure (BP) Analysis Software Model 70774

- Calculates systolic, diastolic peak and mean values, Heart rate, mean IBI, IBI series, systolic, diastolic and mean blood pressure series
- Dynamic auto ranging peak detection
- Interval mode statistics calculation method
- Compatible with Colin 7000, Finapress, and other invasive/non-invasive continuous blood pressure systems
- User programmable calibration constants (V/mmHg)
- No DataLab 2000 needed or used

Electrodermal Activity (EDA) Analysis Software Model 70775

- Calculates specific and non-specific skin conductance responses based on events
- Microsiemens to volts scaling
- Calculates phasic and tonic skin conductance levels
- User defined threshold in microsiemens and max/min latency intervals for skin conductance phasic analysis
- Calculates trough, peak and half recovery times
- Integrates seamlessly with DataLab 2000



Required DataLab 2000 Components:

Acquisition:

- (1) Model 70701 General Purpose Interface Bed
- (1) Model 70760 Data Acquisition Card for Desktop Computer **or** Model 70765 for Notebook Computer
- (1) Model 70762 DataLab 2000 Software **or** Model 70776 MindWare Signal Acquisition Software

EDA:

- (1) Each of the Acquisition components above
- (1) Model 70702 Biopotential Amplifier
- (1) Model 70708 Galvanic Skin Resistance Preamplifier

Optional Respiration:

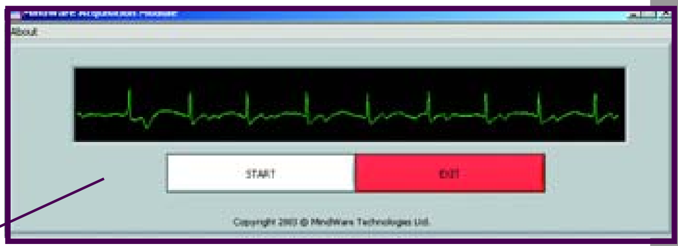
- (1) Each of the Acquisition components above
- (1) Model 70706 Basic Amplifier
- (1) Model 70720 Pressure Transducer
- (1) Model 76513NM10 Pneumo Chest Bellows

MindWare Specialty Software Modules

For truly unique and custom applications, MindWare offers two software modules that work seamlessly with their analysis modules. The Signal Acquisition Software allows up to 16 channels to be acquired and displayed simultaneously. The Digital Movie Stimulus allows for unique stimuli and events to be presented while collecting physiological signals.

Signal Acquisition Software Model 70776

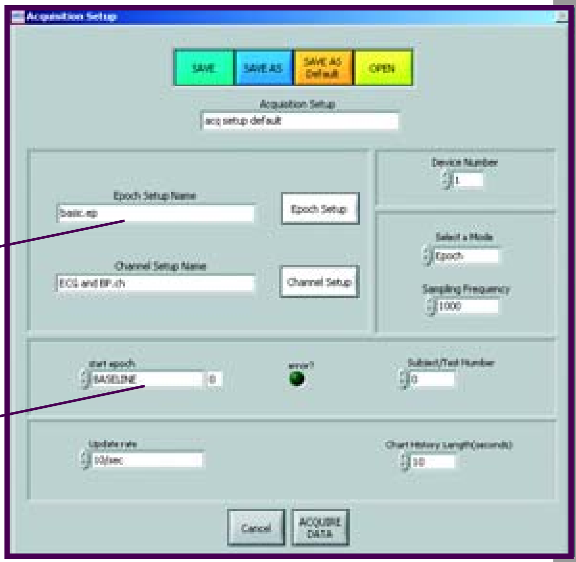
- Collect and display up to 16 channels of analog data and stream data to disk at full hardware rate
- User definable continuous or epoch mode operation, channel names, update rates, and time history
- Replay ability to repeat or accept current epoch
- Integrates seamlessly with DataLab 2000 and most National Instruments DAQ hardware



Simple start window to ensure proper signal acquisition

Required DataLab 2000 Components:

Any DataLab 2000 System components are compatible with this acquisition software. Configure the hardware to fit your specific needs.



Define how MindWare Signal Acquisition Software will acquire and organize the data

Determine acquisition start sequence and acquisition duration

Digital Movie Stimulus & Event Generation System Model 70777

- User definable event times and digital pattern to output
- Plays .avi digital movies or other digital stimulus in .mpeg or .wav format
- Can be used to trigger external data collection equipment or mark specific events
- Compatible with DataLab 2000, National Instruments, and other data acquisition hardware

MindWare Biomechanics System Model 70780

The MindWare Biomechanics system is a total laboratory solution for researchers doing work in biomechanics and related areas. This powerful and flexible system can be customized to meet your exact research needs.

- Collect and display any combination of up to 32 channels of EMG, load cell, forceplate data, goniometer and many other sensor and signal inputs
- Real time collection and streaming to disk of digital video with instantaneous replay
- Fully integrated study designer allows experimental design to control acquisition
- Replay ability to repeat or accept current trial
- Integrated database saves experimental designs, archives subject information and system setup information
- Analysis and report generation for EMG, force and goniometer data
- Integrates seamlessly with DataLab 2000 and most National Instruments hardware
- May be customized to your specifications

Required DataLab 2000 Components:

Acquisition:

- (1) Model 70701 General Purpose Interface Bed
- (1) Model 70760 Data Acquisition Card for Desktop Computer **or** Model 70765 for Notebook Computer
- (1) Model 70762 DataLab 2000 Software **or** Model 70776 MindWare Signal Acquisition Software

EMG 1 Channel:

- (1) Each of the Acquisition components above
- (1) Model 70702 Biopotential Amplifier
- (1) Model 70723 3-Lead Electrode Cable
- (1) Model 70750 Disposable Electrodes

EMG 4 Channel:

- (1) Each of the Acquisition components above
- (4) Model 70702 Biopotential Amplifier
- (4) Model 70723 3-Lead Electrode Cable
- (1) Model 70750 Disposable Electrodes

Multichannel Biomechanical analysis - Range of motion and force

Chart and analysis control for each trial and experiment

DataLab 2000 System General Parameter Cross-Reference

The DataLab 2000 GPI Bed, with the combination of our biopotential and basic amplifiers, is the core of the hardware platform for most physiological signals. The hardware system you choose is dependent upon the signals of interest to you and the number of simultaneous signals acquired. Our pre-amplifiers, transducers, cable sets and electrodes complete the hardware system to your specifications. This data acquisition hardware system, in combination with our software modules, gives you the tools you need for research and teaching. **Use this chart to help determine DataLab 2000 components needed for the signal of interest:**

DataLab 2000 Components / General Parameters	ECG, 3-Lead	ECG, 5-Lead	ECG, 12-Lead	EEG, 3-Lead	EEG, 10-Lead	EMG*	GSR	Pulse	Reaction Time	Respiration Rate	Respiration Flow/Volume	Direct Blood Pressure	Temperature	Force (10 mg to 10 kg)
70701 - General Purpose Interface Bed[1]	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70702 - Biopotential Amplifier	1	1	12	1	1	1	1							
70704 - Response Time Module									1					
70706 - Basic Amplifier								1	1	1	1	1	1	1
70708 - GSR Preamplifier w/ Cables							1							
70710 - Temperature Preamplifier													1	
70720 - Pressure Transducer										1				
70722 - Pulse Plethysmograph								1						
70723 - 3-Lead Electrode Cable	1		4			1								
70726 - Spirometer											1			
70728 - Force Transducer														1
70734 - 12-Lead ECG Module			1											
70736 - ECG Electrode Lead Selector Module		1												
70738A - EEG 10-Lead Selector Module					1									
70750 - Disposable Electrodes (pkg. 100)	1	1	1			1								
70754 - Animal Blood Pressure Transducer												1		
76513NM10 - Pneumo Chest Bellows										1				
76609DL-A - 3-Lead EEG Electrode Cap				1										
76610A - 10-Lead EEG Electrode Cap					1									
76625 - Skin Temperature Probe													1	
76651B - Safety 5-Lead Wiring Harness		1												
76656SC-5 - Electrode Leads (set of 5)		1												

* EMG Experiments can also use 12.5mm reusable electrodes Model 76659 or 8mm reusable electrodes Model 76660.

[1] ***Note:*** Model 70700 includes the GPI Bed Model 70701, Data Acquisition Card Model 70760, and DataLab 2000 Software Model 70762.

For use in education and research. Not intended for medical diagnostic purposes.

DataLab 2000 Hardware

The DataLab 2000 system is more flexible now than ever with the addition of a PCMCIA Data Acquisition Card Model 70765, for laptop applications. Our standard package, Model 70700, includes a PCI Data Acquisition Card Model 70760, for most desktop applications. We also offer a USB platform for data acquisition with Model 70761. Choose the data acquisition system that best fits your needs and preferences for computer platforms.

Choose data acquisition platform:

- **Desktop Data Acquisition:** PCI 12bit Data Acquisition Card Model 70760 (includes driver software)
- **Laptop Data Acquisition:** PCMCIA 12bit Data Acquisition Card Model 70765 (includes driver software and cable adapter)
- **USB Data Acquisition:** USB 12bit Data Acquisition Module Model 70761 (includes driver software, power supply and cable)

Next, add DataLab 2000 hardware:

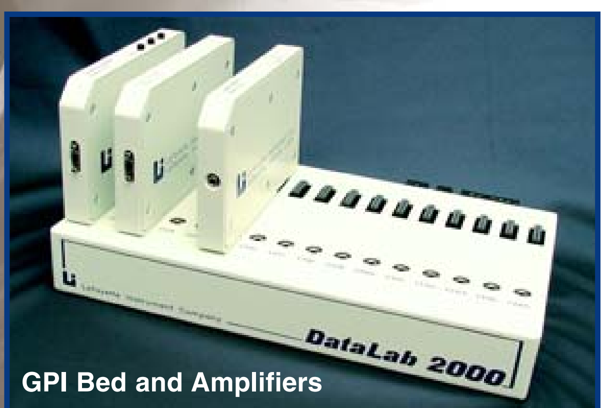
DataLab 2000 General Purpose Interface Bed Model 70701 (includes cable and power supply) and assorted amplifiers, electrodes, transducers and sensors

Then select software to complete the system:

DataLab 2000 Data Acquisition Software Model 70762 with basic analysis or MindWare Signal Acquisition Software Model 70776.

Then add MindWare Analysis modules:

Heart Rate Variability (HRV) Model 70770
Impedance Cardiography (IMP) Model 70771
Electroencephalogram (EEG) Model 70772
Electromyography (EMG) Model 70773
Blood Pressure (BP) Model 70774
Electrodermal Activity (EDA) Model 70775



GPI Bed and Amplifiers

Model 70701 General Purpose Interface (GPI) Bed
Model 70701CBL GPI Connection Cable

The GPI Bed is the primary connection between the amplifiers and the computer. Analog signals from other devices may also be interfaced with your computer via the GPI Bed through the 3.5mm phono jack. The GPI Bed comes complete with a GPI Connection Cable and a DC power supply.

Dimensions: 11.5″x6.25″x1.875″
Weight: 1.84lbs

DataLab 2000 Hardware Functional Specifications:

Number of Input Channels: 16
Number of Analog Output Channels: 1
Maximum Channels Displayed: 8
Maximum Input Voltage: +/- 10V
A/D Resolution: 12bit, (16bit option)
Input Accuracy: 0.0764% of FSR
Input Impedance: 100GΩ
Input Coupling: DC
External Trigger: +/- 10V @ 5mA
Maximum Sample Rate: 1000samples/sec/channel
Minimum Sample Rate: 100sec/sample
Filters: 50/60Hz notch (software)
Gain Ranges: 0.5 through 100
Baseline Adjustment: Auto-scaling in software
Physical Size: Amplifiers: 0.660″x5.5″x3.5″
GPI Bed: 11.5″x6.25″x1.875″
Weight: Bio Amp: 0.48lbs Basic Amp: 0.40lbs
GPI Bed: 1.84lbs
Digital Filters: Available through software

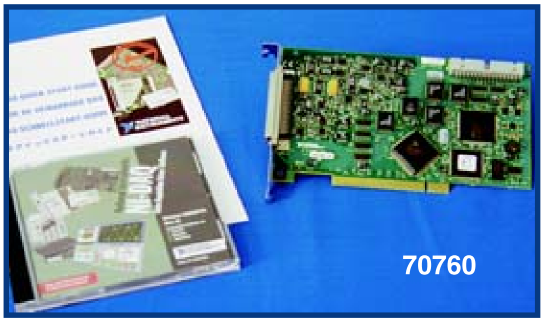
Computer Requirements:

32MB of RAM
20MB of Hard Disk Space
Pentium Class
Microsoft® Windows 95/98/98SE, XP or 2000
CD-ROM Drive
*PCI, PCMCIA or USB Port

DataLab 2000 Amplifiers

Model 70760 Data Acquisition Card for Desktop Computer
Model 70761 Data Acquisition USB Module
Model 70765 Data Acquisition Card for Notebook Computer
Contact us for Information on Other Cards

The Data Acquisition Card for Desktop Computers is a half-size, 12bit PCI card used for analog-to-digital conversions. It uses successive approximation conversion and has a maximum sampling rate of 100kS/s. Other data acquisition cards can be substituted on request.



Model 70702 Biopotential Amplifier

The Biopotential Amplifier is used to input physiological signals, such as ECG, EMG, EEG and GSR. It also provides gain for physiological signals as well as subject isolation for subject safety. It has built-in calibration values of +/- 4mV. Eliminating the need for several types of amplifiers, this amplifier uses a software program to configure the filtering for various types of signals.

Biopotential Amplifier Functional Specifications:

Signal Range: +/- 10V
Input Coupling: Selectable AC/DC
Isolation: 1500VRMS, +/- 2000VDC
Calibration Signals: +/- 4mV
Isolation Leakage Current: 2µARMS Max
Fixed Gain: 2400
Variable Gain: Available through software
Filters: Second order low pass (40db/decade rolloff)
Filter Cutoffs: ECG: 45Hz
EEG: 100Hz
EMG: 2700Hz
Action Potential: 5700Hz

Model 70706 Basic Amplifier

The Basic Amplifier is used to input DC signals from transducers and sensors.

Basic Amplifier Functional Specifications:

Signal Range: +/- 10V
Input Coupling: DC
Isolation: None
Calibration Signals: None
Fixed Gain: 14
Variable Gain: Available through software
Supplied Power: +/- 10V at 25mA
Filters: Second order low pass (40db/decade rolloff)
Cutoff: 45Hz

Model 70712 Oxygen Amplifier

The Oxygen Amplifier is used to measure dissolved oxygen content in photosynthesis and other oxygen generation/ utilization experiments. This Oxygen Amplifier is primarily used in Life Science experiments studying pond water health.

Oxygen Amplifier Functional Specifications:

Electrode Reference Voltage: -0.8VDC
Gain Settings: 250K, 500K, 1.0M, 2.0M
Filtering: 8Hz, 2nd order Low pass, 40dB/decade rolloff
Output Voltage Range: ±10VDC
Settling Time: 90% in 10sec, steady state in 30sec

DataLab 2000 Modules

Model 70704 Response Time Module
Model 63510DL Foot Switch for 70704

The Response Time Module is used to initiate stimuli and record reaction times with the DataLab 2000 System. The Response Time Module can test reaction time, reaction/movement time and multiple-choice reaction time. The Response Time Module can initiate a variety of stimuli, including a 1KHz audio tone, or red and green stimulus lights. Requires Model 70706 Basic Amplifier.

Model 70708 Galvanic Skin Resistance Preamplifier

The Galvanic Skin Resistance (GSR) Preamplifier is used with the DataLab 2000 to measure skin resistance. The GSR Preamplifier has two finger electrodes and a cable with a built-in preamplifier and two calibration buttons. Requires Model 70702 Biopotential Amplifier.

GSR Preamplifier Functional Specifications:

Range: 0Ω - 1.04MΩ
Calibration Points: Minimum - 10kΩ
Maximum -1000kΩ (1MΩ)
Calibration Accuracy: ±1%
Electrodes: Stainless steel
Voltage Range: ±10V
Time Constant: DC (AC filter may be used on
Biopotential Amplifier)
Biopotential AC Time Constant: 0.1sec

Model 70710 Temperature Preamplifier

The Temperature Preamplifier is used with the DataLab 2000 system to measure temperature. It can accept inputs from a variety of different temperature probes, allowing a wide range of measurements with a single preamplifier. Requires Basic Amplifier Model 70706 and a temperature sensor (see page 25).

Model 70718 Hand Dynamometer with Transducer

The Hand Dynamometer is used with the DataLab 2000 system to measure hand grip strength. Requires Model 70706 Basic Amplifier.

Hand Dynamometer Functional Specifications:

Power Supply: +10V
Range: 0-100kg
Voltage output: 0 - 250mV

Model 70726 Spirometer
Model 76608BF Replacement Bacteria Filters (30 pcs)
Model 76608H Replacement Hoses for Spirometer
Model 76608MP Replacement Mouthpieces for Spirometer (100 pcs)
Model 76608NC Replacement Nose Clips

The Spirometer is used with the DataLab 2000 system to measure airflow and lung capacities in respiratory experiments. The spirometer is a 10L capacity dry bellows type. Requires Model 70706 Basic Amplifier.

Spirometer Functional Specifications:

Bellows Capacity: 10L
Measurement Accuracy: ± 0.05L
Output Voltage Range: 0-1V
With Basic Amplifier: 0-10V
Autoclave Setting for Tubing: 10min @ 260°F/127°C

DataLab 2000 Modules and Accessories

With the exception of the Model 70730 Oxygen Electrode and Model 70732 Switched AC Module, the following modules require a Model 70706 Basic Amplifier.

A. Model 70720 Pressure Transducer
This transducer is used to provide single or differential pressure values for physiological and biological measurements, such as blood pressure, human respiration (using the pneumo chest bellows), cellular respiration and photosynthesis.

B. Model 70722 Pulse Plethysmograph
This Photoelectric Pulse Plethysmograph is used to measure pulse waveforms and heart rate.

C. Model 70724 Heart Sounds Microphone
This microphone is a highly sensitive piezoelectric crystal element used to sense heart sounds, peripheral pulse pressure and other dynamic physiological functions.

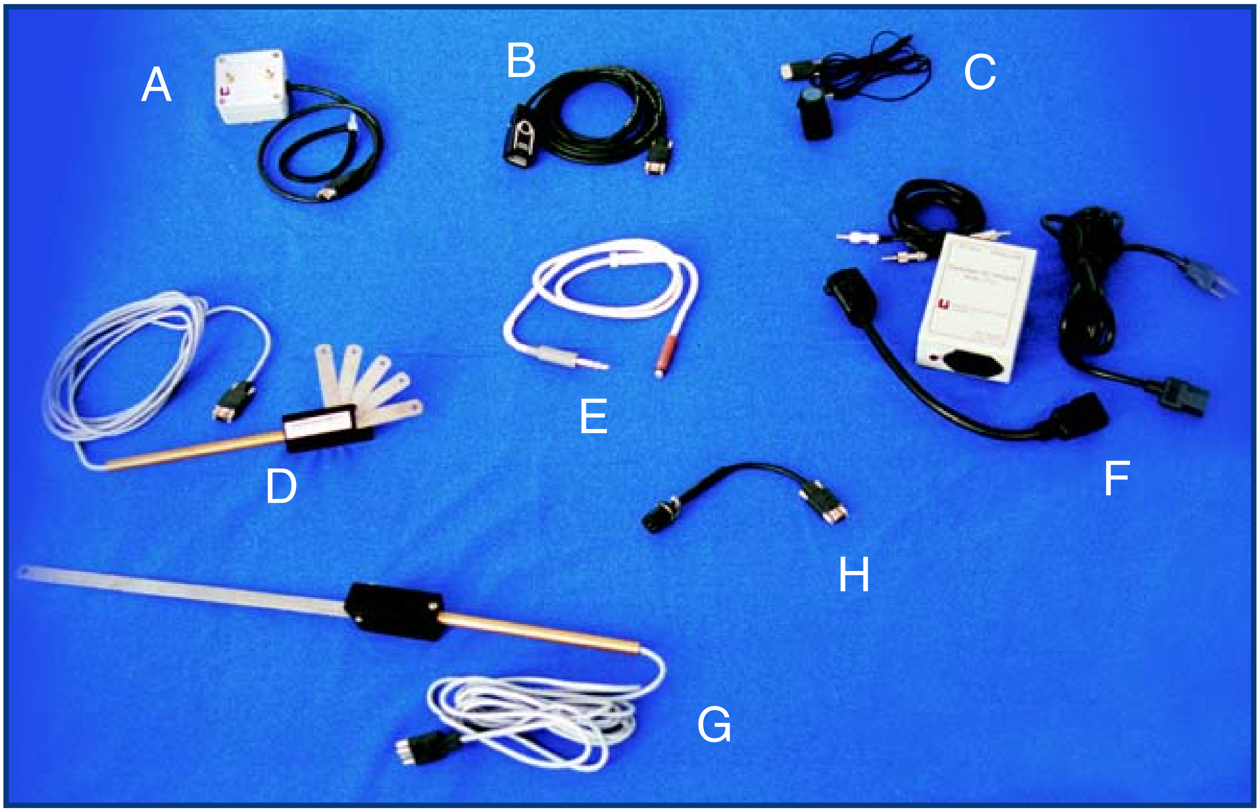
D. Model 70728 Force Transducer
This semi-isometric, strain gauge force transducer has a force range of 10mg to 1kg, and a voltage range of -10 to +10V. It has 10′ of cable with a support rod that measures 5″x0.375″ in diameter.

E. Model 70730 Oxygen Electrode
This Oxygen Electrode with the required Model 70712 Oxygen Amplifier, measures dissolved oxygen content.

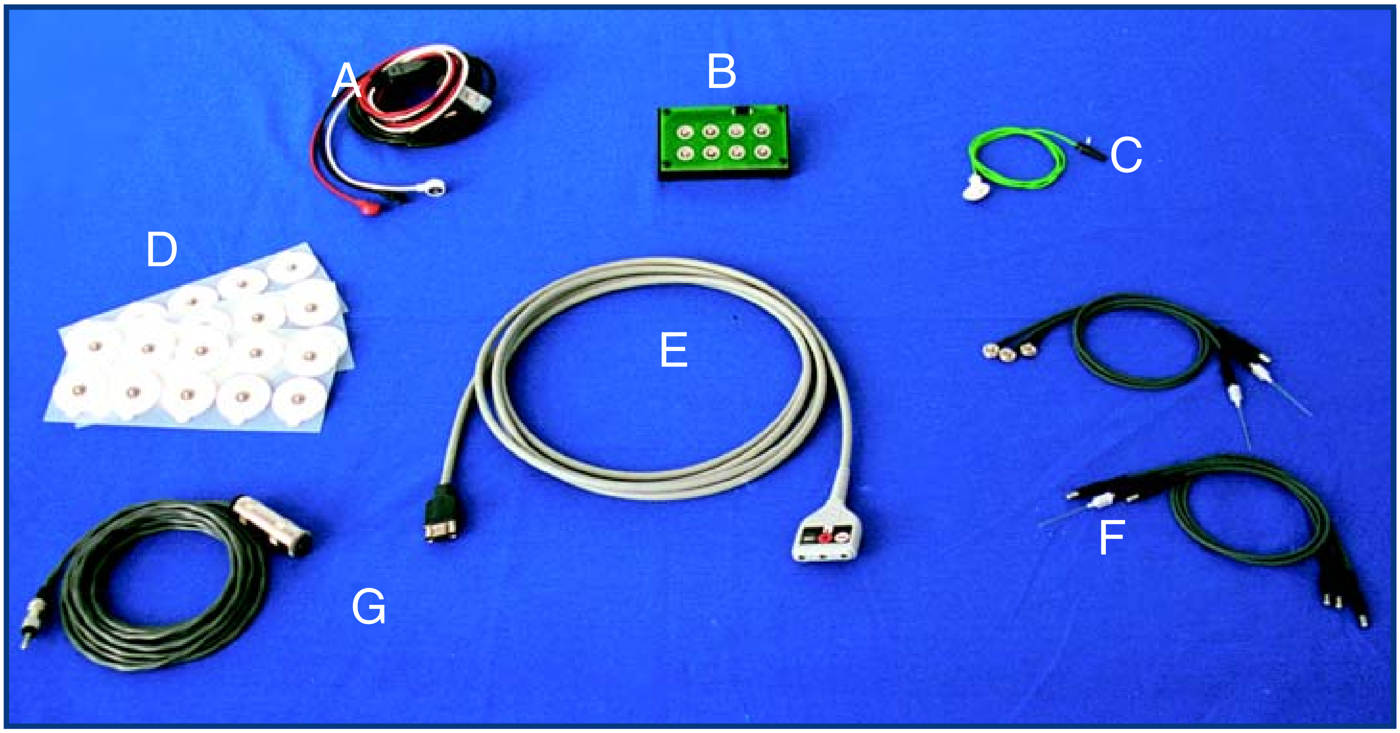
F. Model 70732 Switched AC Module
This module allows a computer stimulus to turn ON and OFF a 120/240 VAC outlet. A common application for the Switched AC Module is to turn on a light in a photosynthesis experiment.

G. Model 70744 Displacement Transducer
This semi-isotonic strain gauge transducer is used to measure slight motions in physiological experiments.

H. Model 70753 Minigraph Transducer Adapter
This adapter allows Minigraph sensors and transducers to be used with DataLab 2000 amplifiers. If you have a Minigraph system and want to use your existing transducers, such as a force transducer, you can use this adapter to connect it to the Basic DataLab 2000 Amplifier.



DataLab 2000 Modules and Accessories



A. Model 70723 3-Lead Electrode Cable
This multipurpose 3-Lead Electrode Cable is used for obtaining physiological measurements, such as ECG, EMG and EEG. It may also be used with needle electrodes and is equipped with standard 2mm snaps for the connection of electrodes. Requires Biopotential Amplifier Model 70702.

B. Model 70746 EEG Electrode Connector Board
This connector board is used to provide a common ground connection for snap electrode leadwires used in EEG experiments.

C. Model 70747A Ear Clip Electrode

D. Model 70750 Disposable Electrodes
These electrodes are used in ECG, EMG and EOG experiments.

E. Model 70751A Leadwire Adapter Cable
This adapter is used to connect electrode lead wires to Model 70702 Biopotential Amplifier (see page 19). The Leadwire Adapter Cable is needed to input signals from an EEG electrode skullcap or EMG/ECG electrodes to the Biopotential Amplifier.

F. Model 70752 Needle Electrodes (set of 3)
These electrodes can be used either to stimulate or to record physiological signals. The stainless steel 22-gauge needles are 1.5” in length, with an aluminum hub. Electrodes come complete with a set of three 18” leadwires.

G. Model 70755 Remote Event Marker
This marker is used to manually mark events while data acquisition is in progress.

DataLab 2000 Modules and Accessories

Model 70723M Miniature Electrode Cable Set, 4mm ID x 6.5mm OD
Comes with reusable electrodes Ag/AgCl. This multipurpose, miniature electrode cable is used for obtaining physiological measurements, such as Facial EMG. Requires Biopotential Amplifier Model 70702.


70736

Model 70734 12-Lead ECG Module
This module is an interface device to provide simultaneous recording of 12 ECG leads. Signals from the 12-Lead ECG Module output to a set of 12 Biopotential Amplifiers. Requires (4) 3-Lead Electrode Cable Model 70723.

Model 70736 ECG Electrode Lead Selector Module
This module allows the user to switch between any of the 5 ECG leads without reconfiguration of the electrode leads.

Model 70738A EEG 10-Lead Selector Module
This module allows the user to select two input leads and a ground lead from a 10-Lead EEG configuration. The user can switch between any combination of leads without reconfiguring the electrode setup.

70738A

Model 70740 Blood Pressure Kit
This Blood Pressure Kit is used with the DataLab 2000 system to measure and record blood pressure and Korotkoff sounds. The Blood Pressure Kit consists of (1) Model 76506LX Blood Pressure Inflation bulb with Pressure Gauge, (1) Model 70720 Pressure Transducer and (1) Model 70742 Blood Pressure Cuff with Microphone.

Model 70742 Blood Pressure Cuff with Microphone
This is a standard blood pressure cuff with a Heart Sounds Microphone Model 70724 embedded in the cuff. The cuff allows blood pressure readings to be taken while recording heart sounds or Korotkoff sounds.

Model 70756 Nerve Conduction Recording Electrode

Model 70757 Nerve Conduction Replacement Electrode
The Nerve Conduction Recording Electrode Model 70756 is used to record action potentials and nerve conduction and stimulate nerve tissue.

Electrode Cap and Paste

These cap electrodes ensure correct placement and reduce electrode application time considerably. Each cap comes complete with gel, syringe, elastic straps, (2) ear clips and soap for washing.


76609A / 76609DL-A / 76610A

Model 76609A 3-Lead EEG Electrode Cap

Model 76609DL-A EEG Electrode Cap (DataLab only)
Comes with Model 70751A Leadwire Adapter Cable. See chart on page 17 for system requirements.

Model 76610A 10-Lead EEG Electrode Cap
See chart on page 17 for system requirements.

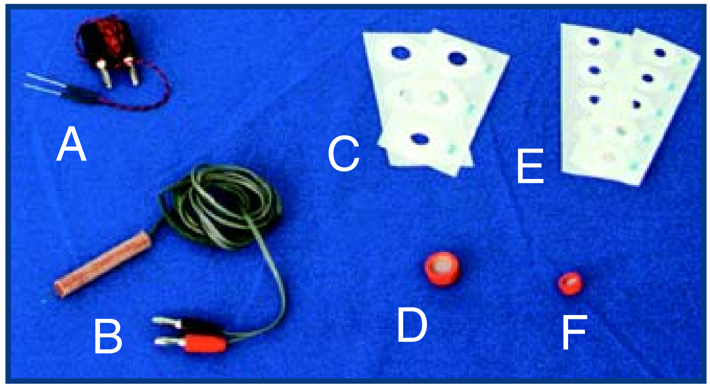
Electrodes and Accessories

Model 76620 EEG Electrode Paste
Model 76621 Electrode Bio Gel, 8 oz
Model 76716M Miniature Adhesive Collars, 4mm ID x 6.5mm OD (pkg of 100)

Pictured to the Right:

A. Model 76632 Pin Electrodes (set of 2)

B. Model 76633 Stimulating Hand-Held Electrode
This insulated stainless steel electrode is used to stimulate tissues too delicate or small for needle electrodes. Recommended only for animal use in conjunction with Square Wave Stimulator Model 82415IS.



C. Model 76659AD 12.5mm Adhesive Disk(pkg of 100)

D. Model 76659 Reusable 12.5mm Electrode with Snap Connector
Sensor diameter is 12.56mm; OD is 19mm.

E. Model 76660AD 8mm Adhesive Disk (pkg of 100)

F. Model 76660 Reusable 8 mm Electrode with Snap Connector
Sensor diameter is 8mm; OD is 12.5mm.

Electrode Accessories

Model 76623G 4 oz Electrode Gel

Model 76623PP Set of 100 Prep Pads

Model 76629B 5-Lead Patch Electrode Set

Model 76642 GSR Electrodes (set of 2)

Model 76651B 5-Lead Patient Cable

Model 76656SC-M 4mm Mini Reusable Electrode with Safety Socket

Model 76656SC-3 Electrode Leads (set of 3)

Model 76656SC-5 Electrode Leads (set of 5)

Model 76656SC-BK Electrode Lead, Black
Model 76656SC-BR Electrode Lead, Brown
Model 76656SC-GN Electrode Lead, Green
Model 76656SC-R Electrode Lead, Red
Model 76656SC-W Electrode Lead, White

Stimulator Accessories

Model 82415IS Isolated Square Wave Stimulator
Model 70758 DataLab 2000 Stimulator Interface Cable
This stimulator is safe to use on both human and animal subjects. It is isolated so that muscle twitch can be safely demonstrated on humans. The Square Wave Stimulator can be used as either a stand-alone unit, or interfaced with the DataLab 2000 system to generate computer-controlled stimuli.

Isolated Square-Wave Stimulator Functional Specifications:

Stimulus Amplitude: 0 to 100V
Stimulus Duration: 0.04 to 50ms
Frequency: 1 to 1000pulse/sec
Line Isolation: 1000V RMS max
Output: Current Limited to 20mA DC max

Temperature Sensors

Model 76625 Skin Surface Probe
Model 76627 Esophageal/Rectal Temperature Probe
Model 76636 Ambient Temperature Probe
Range for each is 10°C to 50°C (14°F to 122°F) when used with our Temperature Pre-amplifier Model 70710

Muscle Accessories

Model 76613T Muscle Tension Adjuster
This tension adjuster has a spring-driven holder used for preparations requiring continuous fine adjustment of applied tension.

Model 76614A Muscle Lever
Used with displacement transducer to calibrate 1mm deflections of the transducer, prior to skeletal muscle studies.

Model 76802 Transducer Stand
This rod stand has a heavy 5″ x 8″ base and a 20″ long, 3/8″ diameter upright rod. Used to suspend force or displacement transducers and muscle clamps.

Model 76803 Rod Holder for 76802
Nickle-plated holder has two thumbscrews to attach a transducer or muscle clamp to the rod stand.

Model 76804 Muscle Clamp
Use the nickle-chrome-plated flat jaw clamp to hold muscle preparations when working with the force or displacement transducer. A holder is needed to mount the clamp onto the rod stand.

Model 76805 Scale Pan and Weights
Aluminum pan with ten, 10g lead weights is used to calibrate the force transducer for muscle-work studies.

Accessories

Model 77500 Aneroid Sphygmomanometer
Model 77525 Large Adult Cuff Only
Model 77530 Replacement Pressure Gauge
Model 78021 Single Stethoscope
Model 76755NCC Nerve Conduction Chamber
Seven platinum wire electrodes enclosed in a clear plastic solution chamber enable the study of the properties of nerve conduction.

Biofeedback Systems

Each Autogenics biofeedback unit gives visual feedback as changes in numerical display and a light bar. A built-in synthesizer enables audio feedback to be given as a continuous tone, integrated clicks or as a piano tone. The frequency of the audio signal changes with the monitored parameter. The unit provides a summary of each session, which includes mean, min, max and standard deviation of the monitored parameter. Electrodes, transducer, carrying case and rechargeable batteries are included.

78118

Model 78115 Autogenics Single-Channel EMG Monitor

AT33 is a portable, single channel EMG instrument.

Features:

- Calculate and display summary statistics
- Time period integration (TPI)
- Extremely high signal resolution
- Autoranging display from 0.01μV - 999.0μV

78115

Model 78116 Autogenics Dual-Channel EMG Monitor

Autogenics' Advanced Technology AT53 is an easy-to-use, portable, surface EMG instrument for single site, dual site and ratio (A/B) monitoring. Simple enough for the EMG novice, yet featured for the most demanding practitioner. It provides both easy-to-understand patient feedback and useful statistical information.

78116

Model 78117 Autogenics Single-Channel SCR Monitor

Autogenics' Advanced Technology AT64 is an easy-to-use, portable, single-channel SCR instrument with built-in data collection capabilities. The AT64 provides the most useful SCR information: *quantified* data on an individual's arousal level.

78117

Model 78118 Alpha-Theta EEG Trainer

Autogenics' Advanced Technology AT62 EEG Alpha-Theta Trainer is a simple, self-contained, portable EEG monitor. The AT62 is now supplied with standard Gold ear and scalp electrodes, paste, prep, pads and full instructions on using the 10-20 system for maximum EEG signal resolution. With no software to learn, you can use the Alpha-Theta EEG Trainer the day you receive it.

78118

Model 78119 Single-Channel Temperature Monitor

Autogenics' Advanced Technology AT42 TEMP is an easy-to-use, portable, single-channel temperature training instrument. Its built-in microprocessor collects and analyzes session data, and presents temperature information in ways that are easier than ever to understand.

Features:

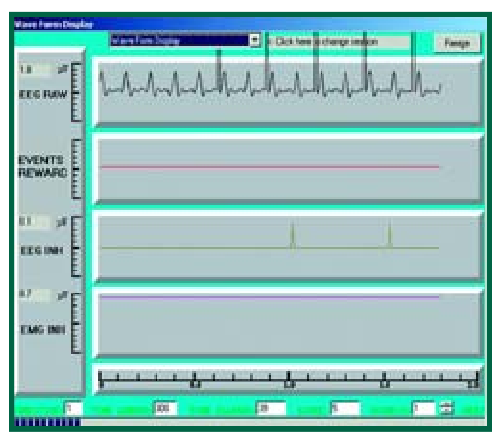
- Calculation and display of summary statistics (session mean, max, min and SD)
- Temperature display in °C or °F
- Temperature feedback resolution of 0.1 or 0.01 (user selectable)

Model 78140 EEG Neurofeedback System

Since it's introduction in the 1990s, the A620 EEG has been used for thousands of hours by professionals in their biofeedback practice. No other neurofeedback instrument has the reputation of the A620 EEG and the new version, the A620-3 EEG, continues the precedent-setting performance with new software and state-of-the-art hardware for today's computer marketplace. The A620-3 EEG incorporates the same operating characteristics of its predecessor with new Windows®-type screens and easier to use mouse and keyboard commands.

Features:

- Windows® 95/98/98SE, 2000 and XP compatibility
- Use with notebook or PC computers
- New Windows-type displays
- Easy to use mouse and keyboard functions
- Selectable EEG frequencies 1 to 32Hz
- Over 500 biofeedback displays
- Real-time feedback information
- Full data entry per patient
- USB serial port connection



Relaxation Tapes

Model 78237 Relaxation Program CRP-1 (Three tapes)

Developed and voiced by Dr. Thomas Budzynski, University of Colorado Medical Center. Set of (6) 19 - 30min cassette tape sides is designed to augment biofeedback training.

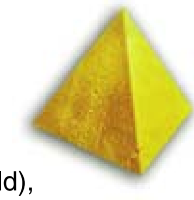
Model 78238 Biofeedback Procedures Tape T-18 (One tape)

By Dr. Thomas Budzynski, University of Colorado Medical Center.
A systems approach to biofeedback training defines modular diagnostic/training sequences for most efficient integration of EMG, temperature and EDR biofeedback.

Model 78239 Biofeedback; A Practioner's Guide (Second Edition)

By Mark Stephen Schwartz, Ph.D and Associates. Dr. Schwartz and his colleagues present the application of biofeedback to specific disorders in a range of settings. With hundreds of ideas, guidelines and discussions about practical topics, this book is a storehouse of knowledge for the novice practitioner and seasoned professional alike.

Biofeedback from Dr. Schuhfried



With the Schuhfried system not only will you get a flexible and easy-to-use system, but you will also get state-of-the-art software. The system not only incorporates the basic features for biofeedback, but also includes training and evaluation features that are not found in most biofeedback systems. Some of the included features are: threshold value training (event is triggered if value exceeds/drops below the threshold), acoustic feedback, background music from clients' favorite audio CD(s), computer background music, electrode/sensor placement help and online context sensitive help. Many other features are also available with the different software modules.

Session Evaluation

One or several sessions can be displayed next to each other or on top of each other, thus the client can reflect on the therapy course. The program automatically calculates the most important statistical parameters like: session duration, mean value and minimum and maximum values. Furthermore, artifacts can be corrected after the session. Information measurement scales can be zoomed in to a higher solution in order to guarantee an adequate form of display. Several measurement values can be summarized into columns by forming a mean value, thus, the width of each column corresponds to a certain time unit. The program offers the ability to store, compress and export data to other Windows-based programs like SPSS® or Microsoft® Excel.

Schuhfried Biofeedback 2000:

- **Reduces Stress and Burn-out-syndromes**
- **Reduces Headache and Backpains**
- **Reduces Migraines**
- **Reduces Hypertension**
- **Reduces Incontinence**
- **Reduces Psychosomatic Troubles**
- **Builds up Muscles**

Biofeedback 2000 Advantages:

- **Scientifically Grounded Therapies**
- **Painless Treatment**
- **Improved Self-control**
- **Reduced Medication**
- **NO SIDE EFFECTS!**

SCHUHFRIED
Quality Through Competence

Biofeedback Hardware

Model 73001 Full Physiological Recorder
Connections for (1) EDA, (2) EMG, (2) Temperature, (1) PLE, (2) Respiration, (1) Motility and (1) Microphone channel.

73001 with accessories

Model 73002 EDA Electrode Cable
Model 73003 EMG Electrode Cable
Model 73004 Rectal EMG Probe
Model 73005 Vaginal Electrode NEEN
Model 73006 Vaginal EMG Electrode Cable
Model 73007 Skin Temperature Sensor
Model 73008 Finger Pulse Plethysmograph (PLE)
Model 73009 Ear Pulse Plethysmograph (PLE)
Model 73010 Reflex Pulse Sensor
Model 73011 Respiration/Breathing Belt Sensor
Model 73012 Motility Sensor
Model 73013 Microphone for Sound Level
Model 73014 Microphone for Voice Record (attached to PC sound card)
Model 73016 Adhesive Ring (to attach reflex pulse and motility sensors)

Simple Starter System

Model 73001 Full Physiological Recorder
Model 73100 Basic Software Module (required)
Model 73002 EDA Electrode Cable
Model 73003 EMG Electrode Cable
Model 73007 Skin Temperature Sensor
Model 73008 Finger Pulse Plethysmograph (PLE)
Model 73011 Respiration/Breathing Belt Sensor
Model 70750 Disposable Electrodes

Biofeedback 2000
System Requirements:

Pentium Class PC
64MB RAM
200 to 400MB Free Hard Drive Space
CD-ROM Drive
Serial Port
Floppy Drive
16bit Soundcard, MIDI Capable
Graphics Card
Minimum Resolution of 800 x 600 Pixels, 16bit Color
Windows® 95/98/98SE, XP or 2000

Biofeedback Software

Model 73100 Basic Software Module

The basic module includes all of the standard features of the system and allows for basic biofeedback training.

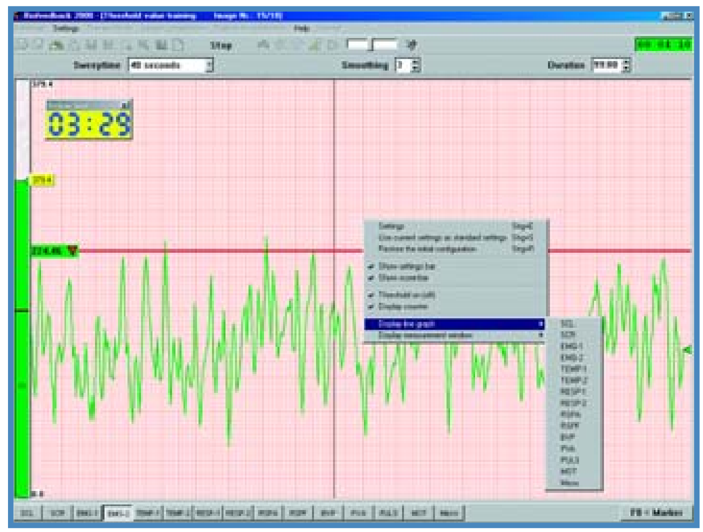
Specialty Psychophysiological Modules

Model 73108 Stress Test

When confronted with an acoustic or visual stress stimulus, all the client's physiological parameters are recorded. The concluding evaluation shows the client's vegetative reactions and their intensity (cardiovascular, electrodermal, etc.) and according to the time elapsed, conclusions can be drawn on the client's psychic processes (e.g. expectancy fear). Each provocation phase length (baseline, announcement, stimulus offer and relaxation) can be selected and is depicted by separation markers in the evaluation.

Model 73109 Tolerance Test

The client's task is to match shape, color and pitch to a moving geometric form. Selection of shape, color and pitch is made using the computer's mouse and clicking on the correct responses. The program continuously calculates the percentage of correct responses and adapts the difficulty in such a way that the client is able to "just" solve 50 percent of the tasks. Therefore, the client is subject to an "optimum" of constant stress and his psychophysiological reaction components can consequently be evaluated.



Model 73101 Breathing Training

Specialty Training Modules

Model 73101 Breathing Training

The system measures and analyzes the client's actual breathing pattern and then provides a respective ideal breathing curve. Thus, the client trains his/her breathing behavior to match that of the ideal curve.

Model 73102 EDA Relaxation Training

The goal is to lower habitual state of arousal or sympathetic nerve activity through skin conductance.

Model 73103 Confrontational Training

The client can observe their autonomic nervous system reaction under extreme conditions to try to gain control over them.

Model 73104 Voice Recorder

The conversation between client and therapist is recorded and synchronized with the physiological parameter being monitored. Thus the therapist will be able to analyze topics that triggered increased arousal or stress, in detail, after the session.

Model 73105 Neuromuscular Rehabilitation

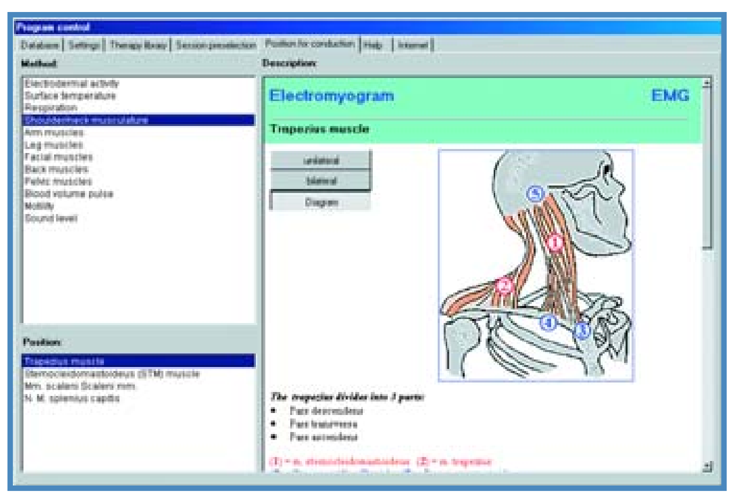
This training module instructs the client to perform defined muscle contractions to gain control over the muscle or muscle group.

Model 73106 Electromyography Relaxation Training

The goal of the client is to learn to reduce muscle contractions or produce symmetrical contractions to relieve backaches, tension headaches or other musculature tensions.

Model 73107 Blood Circulation

Improve blood circulation through training using temperature feedback.



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5) Purchase order number or method of payment
6) Telephone number

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