



Software Product Description

SPD 5.1.1

PRODUCT NAME: LAB-8/E PT Version 1 (Paper Tape Software System)

DESCRIPTION:

The LAB-8/E Software is a versatile, PDP-8/E based, applications system that provides powerful laboratory data-acquisition, manipulation and display capabilities at a cost less than that of most special purpose laboratory instruments.

The Basic Averager and the Advanced Averager routines digitize, display, and average analog input signals. Sampling rate, number of sweeps, and delay may be adjusted on-line. Prestimulus averaging, dual resolution, confidence limits and trend, and signal editing and sorting may be performed.

The Histogram programs acquire and display, in histogram form, time between events, where an event is defined as a signal crossing the threshold. Events may be detected on the same input channel (Time Interval) or on different channels with all responses detected (Post-Stimulus Time) or on only a set number of channels (Latency). Variation of response over the course of the experiment may also be measured.

The Correlation Programs can be used to detect periodic signals buried in noise or provide a measure of similarity between two waveforms. Auto-Correlation measures the similarity of a signal to a time delayed version of itself, whereas Cross-Correlation measures the degree of similarity of one source or input to a second source. No synchronizing events, such as the trigger required in signal averaging, need be available for the application of correlation techniques.

The DAQUAN program (LAB-8/E-15 System only) is used to acquire data by boxcar, multi-sweep time averaging, from one instrument at a time, and to display the results. A wide variety of subsequent processing techniques such as smoothing, differentiation, curve simulation, etc., are then used to reduce the data.

DAQUAN is intended for the following applications:

- Spectra comparison, stripping, and simulation
- Gaussian and/or Lorentzian fitting
- Deconvolution of fused peaks (by Gaussian, Lorentzian or mixed technique)
- Integration
- Differentiation
- Multiplication
- Scaling
- Plotting (standard X-Y recorder)
- Peak detection and summary reporting of positions and percent areas

BASIC/RT (included with LAB-8/E-15) provides the researcher with a powerful and complete software package for total programmable control of all LAB-8/E peripheral devices: analog channels, Schmitt Triggers, crystal clock and display scope. In addition, commands to specify parameters such as pulse rate and response time permit optimum experimental flexibility. Buffer allocation commands for the display and analog channels facilitate computer efficiency. Using the timing commands, a delay before sampling, a pause until a user response is typed on the Teletype, or a pause until an interrupt occurs, can easily be included in a program. Another feature, the user's command, permits customized system software. All of the features provided by 8K BASIC are also implemented in BASIC/RT, permitting total programmable I/O control and user-coded functions.

THE NMR Simulator (LAB-8/E-15) will calculate, display and plot theoretical NMR spectra of any system of spin- $\frac{1}{2}$ nuclei containing up to six spins. Its inputs, in addition to chemical shifts and coupling constants, are sweep width, and spectrometer frequency. While the principal use of this program is for NMR, it is not limited to proton range values. Shifts, coupling constants, width and offset may fall anywhere in the range 10 to 10 Hertz. This program contains a first Lorentzian line shape routine and plot routines for both the stick figure and Lorentzian curve spectra.

The NMR Signal Averager is specifically designed to solve the problems of signal averaging encountered during NMR or ESR spectroscopy. It was written to provide an easily-used averager for situations in which the computer could control the sweep of the spectrometer. However, it actually represents a versatile averaging package that can be used in any situation requiring application of a -5 to +5-volt sweep voltage. When this sweep voltage is acceptable, the NMR Averager offers three distinct advantages: the necessity for a sync pulse is eliminated; multiple sampling of each point is possible; and a sophisticated calibration routine permits determination of the exact frequency of any line in the accumulated spectrum.

MINIMUM HARDWARE REQUIRED:

LAB-8/E-05 Basic System
LAB-8/E-15 Advanced System

OPTIONAL HARDWARE SUPPORTED:

LE8 Line Printer (BASIC/RT)
PC8-E High-Speed Paper Tape Reader and Punch (BASIC/RT)

PREREQUISITE SOFTWARE:

None

OPTIONAL SOFTWARE SUPPORTED:

None

TRAINING CREDITS:

None

SUPPORT CATEGORY:

C, Software Support will be provided as listed in the Software Support Categories Addendum to this SPD.

UPDATE POLICY:

No updates are planned for this product.

ORDERING INFORMATION:

This software is furnished under a license for use on a single CPU and can be copied and modified (with inclusion of DIGITAL's copyright notice) only for use on such CPU, except as may otherwise be provided in writing by DIGITAL.

Source and/or listing options are available only after the purchase of a binary license and after a source license agreement is in effect.

The following key (B,C,Y) represents the distribution media available for the product and must be specified at end of "Q" number i.e., QF060-CB = binaries on Paper Tape.

B - Paper Tape C - DECTape Y - Floppy Disk

Standard Options

QF060-C_ Single-use license, binaries, documentation, no Support Services (media: B).

Source/Listing Options

QF060-F_ Source Listing Option on paper (media: Z).

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