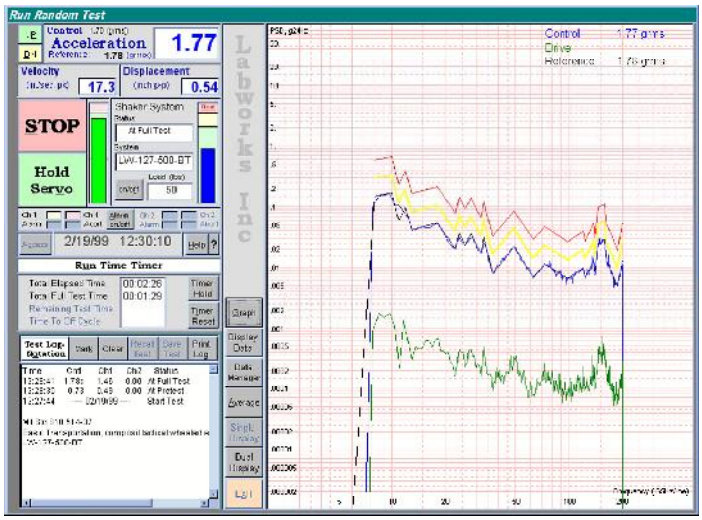
VibeLab™ VL-144x

DIGITAL SINE AND RANDOM VIBRATION CONTROLLER

- Straightforward Virtual Instrument operating under Windows™
- Automatic calculation of Acceleration, Velocity, and Displacement
- Programmed test requirements automatically compared to system capabilities and accelerometer sensitivity
- Online help for both novice and experienced users
- Password protection and extensive report generating capabilities
- Comes assembled with everything you need including computer, monitor, printer, keyboard, and accelerometer. Ready to Run, Not a Kit



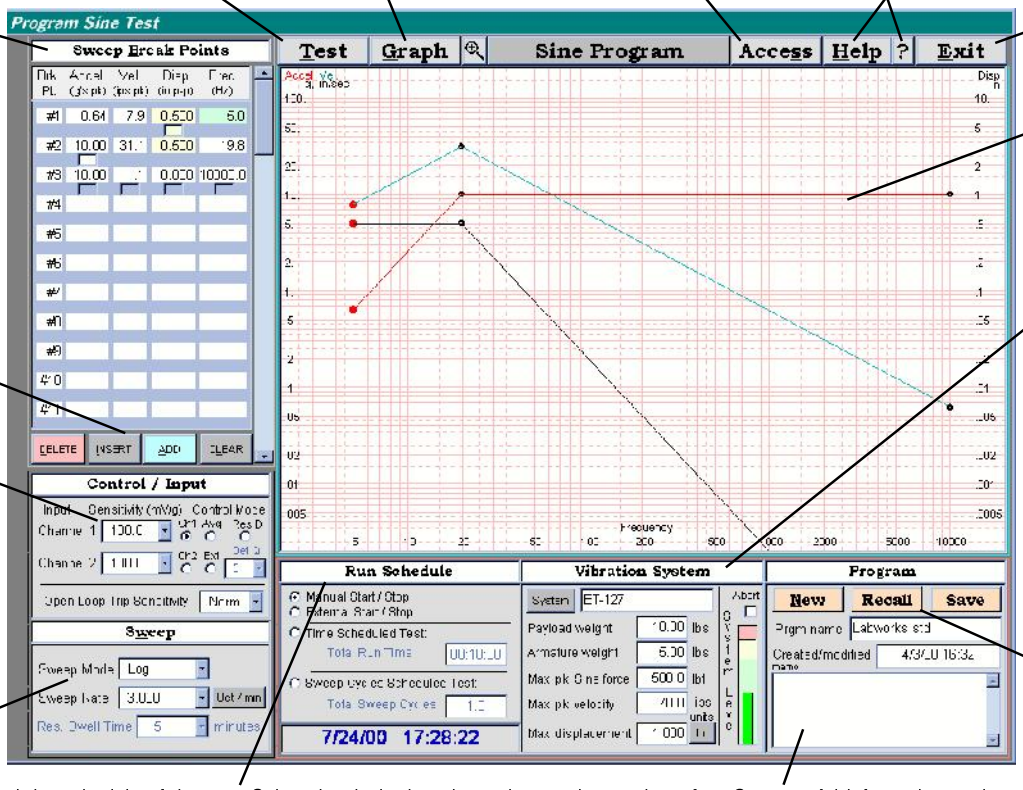
Complete Controller System Includes:

- Computer
  VibeLab ™ and Windows™ software installed, ready to run
  Monitor, Keyboard, Mouse
  Printer
  VibeLab ™ Shaker interface PC Board w/accelerometer power supply factory installed
  Accelerometer package: accelerometer, cable, stud, and mounting base

Labworks Inc.

2950 airway ave., a-16, costa mesa, ca 92626 • (714) 549-1981 • fax (714) 549-8041 • www.labworks-inc.com

Sine Program Screen



Go to the run test screen.

Scale the graph to best suit the test.

Access password protection.

Complete online and pointer help available.

Breakpoint entry field. The active breakpoint is highlighted. Click on the box below an acceleration, velocity, displacement or frequency value to copy it into the next breakpoint. When any two values for a breakpoint are entered, the other two are calculated.

Go back to the introduction screen.

The programmed acceleration, velocity, and displacement are shown graphically as they are programmed.

Easily add, insert, and delete break points.

Enter the vibration system limitations and payload information and the controller will alert the user to potential problems during the programming phase. Set the system abort to provide automatic system protection during the actual test.

Set the accelerometer sensitivity and turn channels on and off. Select the desired control mode; channel 1, channel 2, average, extremmel or resonance search and dwell.

Create new test programs or recall existing ones. Run, modify, rename, and save to the test library.

Select the desired type of sweep; logarithmic, linear, resonance search and dwell, accelerometer calibration, etc.

Control the schedule of the test. Select the desired total test time or the number of sweep cycles or allow the test to be externally or operator controlled.

Save useful information to the disk along with the test profile.

Sine Run Test Screen

Clicking in this area toggles the display between the large control channel format shown and the more detailed format which displays channel one, two and control information simultaneously.

Graphic display of either run time or recalled test data. T–Square and cursor position displays (not shown) enable detailed inspection of the graphic data.

Scale the graph to suit the test spectrum.

One bar graph displays the current output level of the controller which allows the operator to adjust the system gain to best suite a specific test requirement. The other bar graph can be enabled to display the overall vibration system operating level.

Chose which data is graphically displayed at any given time.

Save up to ten complete sets of test data for post analysis. Return later and recall test data, reformat and either print or transfer to the clipboard for generating reports.

A controllable timer keeps track of the current test.

Select single or dual graph display

Go back to the program screen.

A continuous test log automatically keeps track of significant events. This log may be printed along with notations entered by the operator.

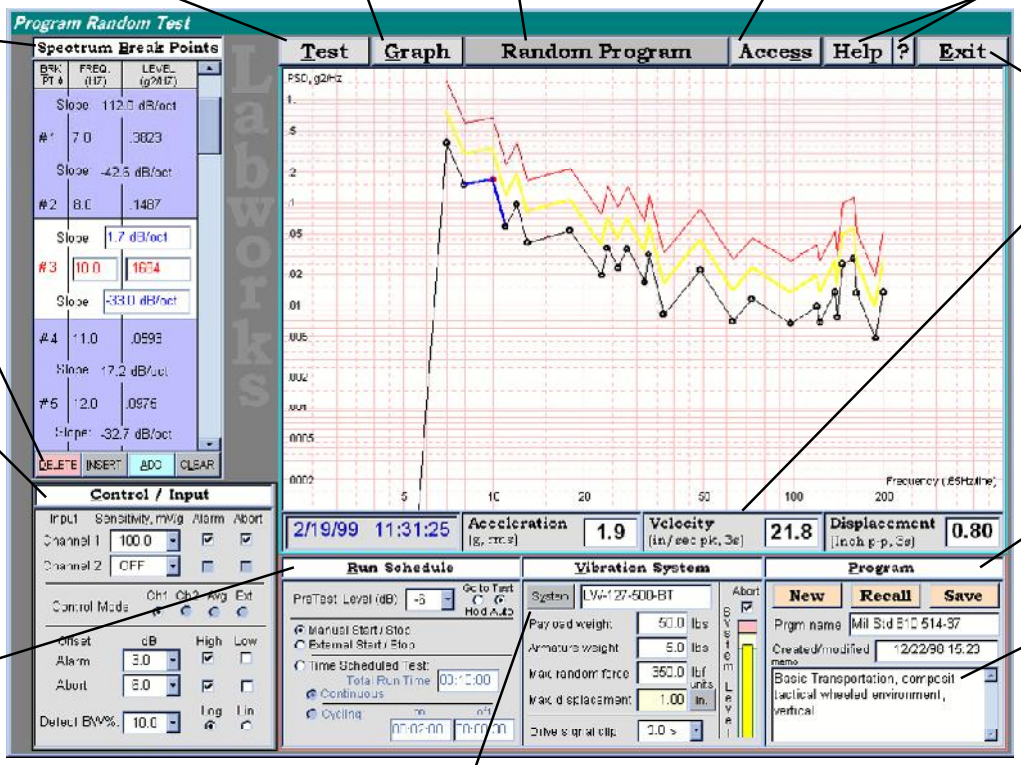
The data displayed can be cleared without stopping the test.

Select either manual or program control of the sweep. In the program mode the sweep rate and direction may be adjusted during the test. The sweep can be set to start automatically and sweep either up or down in frequency.

The servo speed and trip sensitivity can be adjusted to accommodate difficult to control test articles.

Select either servo or manual gain control. The test may be stopped and then continued under program control without losing the test data. Indicators warn the operator when the gain is up or the cursor keys are enabled.

Random Program Screen



Go to the run test screen.

Scale the graph to best suit the test.

Select Frequency Bandwidth.

Access password protection.

Complete online and pointer help available.

Spectrum entry field. Enter and edit data as break points or sloped line segments. The part of the spectrum in the active edit window is highlighted in blue on the graphic display.

Go back to the introduction screen.

Acceleration, velocity and displacement requirements automatically calculated and displayed as the test is defined.

Easily add, insert, and delete break points.

Turn channels on and off and control the sensitivity, alarms and aborts. Select the desired method of control. Select tolerances for the alarms and aborts.

Save new test profiles or recall existing ones. Run, modify, rename and save to the test library.

Control the schedule of the test. Program the desired elapsed time for the test, either continuous or cycled on and off, or allow the test to be operator controlled.

Save useful information to the disk along with the test profile.

Enter the vibration system limitations and payload information and the controller will alert the user to potential problems during the programming phase. Set the system abort to provide automatic system protection during the actual test.

Random Run Test Screen

Up and Down buttons allow the operator to change the control acceleration manually while under servo control.

Displays the current vibration acceleration, velocity, and displacement along with the programmed reference and the current control servo reference acceleration.

Graphic display of either run time or recalled test data. T–Square and cursor position displays (not shown) enable detailed inspection of the graphic data.

Start, Stop, Reset and Resume controls are located next to the controller signal output bar graph. The shaker system information and the status window, which provides the operator with information regarding the current tests progress, are also located here.

Scale the graph to suit the test spectrum.

Chose which data is graphically displayed at any given time.

Save up to ten complete sets of test data for post analysis. Return later and recall test data, reformat and either print or transfer to the clipboard for generating reports.

A control to enable and disable the previously programmed alarm and aborts is provided along with status indicators.

Control the averaging of the run time display data.

A controllable timer keeps track of the current test.

A continuous test log automatically keeps track of significant events. This log may be printed along with notations entered by the operator.

Go back to the program screen.

Select single or dual graph display

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Digital Sine and Random Vibration Controller

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General Description

The VibeLab Digital Sine and Random Vibration Controller is a pc-based vibration test controller. Running under the Windows operating system, the controller generates and runs user-defined vibration tests. The electrical output of the VibeLab controller is a real-time analog voltage signal suitable for use in driving most commercially available wide band vibration test systems. VibeLab utilizes vibration acceleration feedback from one or two accelerometers mounted on the shaker, fixture, and/or test article.

VibeLab's straight forward user interface allows creation and running of vibration tests with minimal learning time. All critical settings are software interlocked and cross checked to insure that only valid tests are generated. The virtual instrument approach to the controller user interface puts all of the user-required settings and parameters in view, with minimal hidden menu activity required when defining or running a vibration test.

While running a test, VibeLab can be configured to monitor the vibration system operating level and even abort its operation if system limits are exceeded. Most common Labworks vibration systems are included in the VibeLab system library or the user can easily define and store custom system parameters.

VibeLab's primary report output is graphical. Either a single large or two smaller graphs can be prepared and printed directly, or copied, to the clipboard, for inclusion on other Windows-based applications. Each graph carries its own notation field that prints automatically in the direct print mode. The test log header includes the name of the parent test program for reference. Any two data sets can be displayed on each graph with crosshairs provided for specific level or frequency identification, if required. The data files saved are spreadsheet compatible for custom report generation. The chronological test log is also available for incorporating into reports.

General Specifications

Frequency Range

Random	6 to 2,000 Hz or 2 to 500 Hz
Sine	2 to 10,000 Hz
Display Units	English or Metric units with automatic conversion

Reports

Graphical, Tabular, Current or Post Analysis

Signal Input

Number of Input Channels	2
Acceleration Range	Random: 0.2 to 100 grms Sine: 0.1 to 200 gpk
Acceleration Resolution	16 Bit
Maximum Input Voltage	5 V
Connectors	BNC
Dynamic Range	80 dB minimum

Vibration System Protection

System Checker	Automatic cross check of program with the vibration system force and displacement capabilities
Sensitivity Checker	Automatic cross check of program with accelerometer dynamic range and sensitivity
Run-Time and Output Level Monitors	Show the vibration system operating level and VibeLab signal output voltage level

Test Article Protection

Acceleration	Open loop/low gain + rate detection
Random	Over and/or under acceleration alarm and abort levels
Sine	System operation level, acceleration and displacement
Manual Abort	Red "STOP" key and external shutdown terminals
External Interlock	Normally open switch or Logic Low

Password Access/Training

Up to 3 levels plus demonstration/ learning mode

Operating Modes

Manual, Timed, Timed Cycle, Sweep Cycle, External Switch/TTL

Control

Random Modes	Single channel, average, or extremal technique
Sine Modes	Single channel, average, extremal, resonant search and dwell, calibration. All modes use a tracking harmonic comb filter

Program

Random Spectrum Entry	Break point or line segment slope, graphical display
Sine Sweep Profile Entry	Break point or constant level, graphical display of acceleration, velocity, displacement, and frequency
Other Parameters	Virtual intrument design, minimum hidden menus

Test

Save and Recall	All parameters, user named including all program parameters, data, and display setting
Last Test	The last test run is automatically saved and can be recalled and continued or analyzed

Run Time Display

Graphical Data	Single or dual graphs with up to 2 acceleration/data channels or output drive data sets/graph: Ch 1, Ch 2, Control, Drive, Transmissibility: Ch 1/2 and Ch 2/1 (ch1/drive, sine)
System Monitor	Vibration system operation level meter
Timers	Cycle timers and sweep cycle counter

Graph/Data Save and Print

Save a full data set to disk, print direct, or clipboard the Test Log or any Graph

Post Analysis

Any saved test can be recalled and the data re-configured for report printing or saving to the clipboard for incorporation into other Windows applications