



Solutions in Signal Processing

Low Cost Yet Highly Evolved Shaker Control System

SignalStar®

# Scalar



4 to 8 input channels

120 to 150 dB dynamic range

Vibration control and analysis

SignalStar

Vibration

Control

System

## Scalar

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**Data Physics**  
Corporation



# SignalStar®

Vibration Control Systems



# Scalar

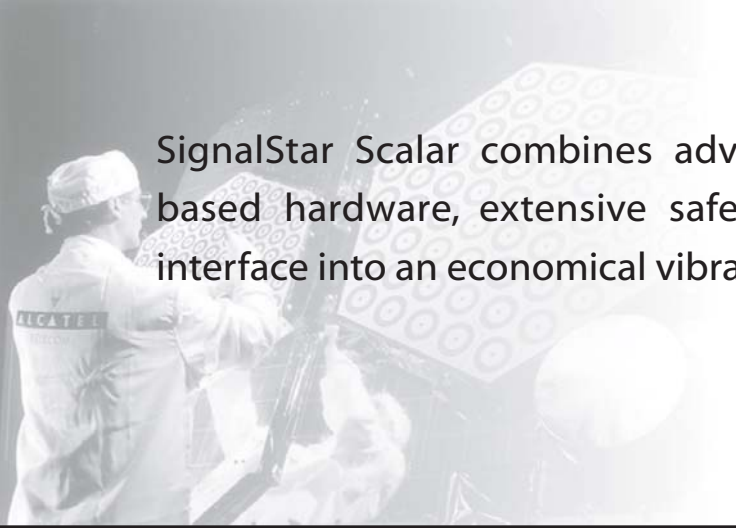
## Low Cost Yet Highly Evolved Shaker Control System

SignalStar Scalar is the ideal controller for users who do not require all the capability of a full featured controller like the SignalStar Vector. Scalar is available as a smaller system with reduced features for optimum fit with a user's requirement at the lowest cost. Yet, Scalar offers the same control quality as the high powered Vector because it shares the DSP architecture and control algorithms with SignalStar Vector and Matrix. Scalar is based on the acclaimed SignalStar intuitive graphical user interface but made simpler for the novice user by limiting the parameters to those essential to the control task. Your investment in Scalar is protected against obsolescence. Scalar can be configured to meet your current needs and later upgraded as your requirements increase.

### **dp** Standard Features

- System
  - 4 to 8 input channels
  - Available as a standalone controller with an embedded PC or controlled via a host PC
- Random
  - Up to 800 frequency lines, (6400 optional)
  - Up to 5 kHz bandwidth, (20 kHz optional)
- Sine
  - Up to 5 kHz sweep range (20 kHz optional)
  - True continuous swept sine
  - Optional digital tracking filters with user-specified fixed or proportional bandwidth
- Classical Shock
  - Up to 8192 point frame size (65,386 optional)
  - Time, frequency, or mixed control strategies
- Advanced Control Options
  - SRS Synthesis
  - Sine on Random
  - Random on Random
  - Time Data Replication





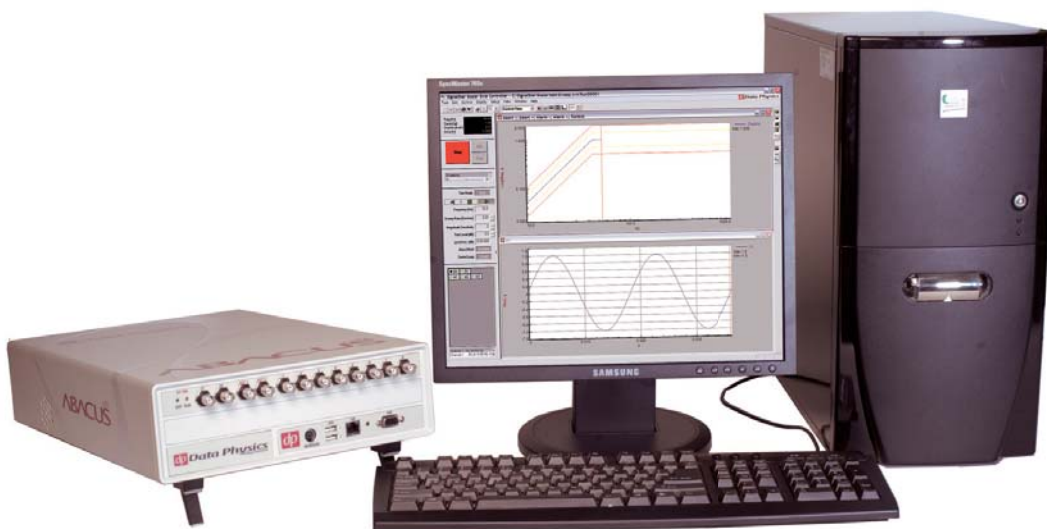
SignalStar Scalar combines advanced control algorithms, powerful DSP based hardware, extensive safety features, and intuitive graphical user interface into an economical vibration controller.

## Powerful DSP based system

Scalar is a compact PC-based vibration controller incorporating 32-bit floating point digital signal processors for closed loop control signal processing. Scalar may be configured with 4 to 8 input channels for control and analysis.

Each input channel has a maximum sampling rate of 107 kHz enabling accurate time domain reproduction of high frequency signals which is critical for transient shock and time replication. High quality analog components with 24-bit analog to digital converters provide up to 150 dB of dynamic range. Scalar input channels are software selectable as single ended or differential to eliminate common mode noise associated with ground loop problems. Software selectable ICP power for transducers is standard.

Scalar does not sacrifice control performance for system simplicity. Scalar incorporates a powerful DSP based control engine for realtime control. Over 1 GFLOP of processing speed ensures fast, stable control. Graphical user interface, networking and data storage are managed by an embedded PC running Microsoft Windows XP operating system.



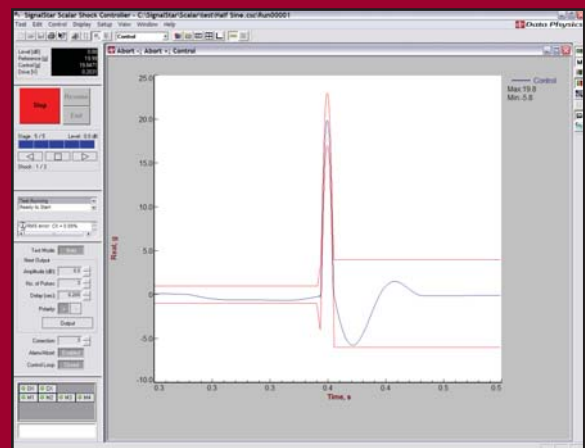
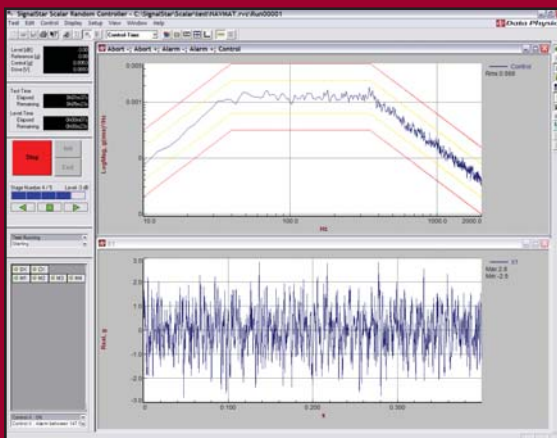
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# SignalStar Scalar

## Intuitive Operation

SignalStar Scalar is designed with ease of use in mind. Each control application follows the same simple steps for test setup. Test parameters are organized in a single dialog that leads the user through setup of control parameters, reference profile, and input channels. The run schedule lists all automatic operations during the test such as level changes, dwell operations, data saves, and printing commands. New tests are created from the standard default template or from an existing test by copying and editing.

SignalStar Scalar offers three standard graphic layouts for display of test data in the three phases of a vibration test: pretest, run and review. These layouts may be customized by the user to have up to 16 graphs and up to 8 signals per graph. All relevant signals are available for display such as Control, Measurement Channels, Drive, Error, Transfer Functions, Reference, and Tolerance Limits. For more flexibility the advanced layout manager option provides the ability to define an unlimited number of graph layouts each with up to 32 graphs and up to 16 signals per graph.



Tests can be run in a fully automatic mode or the user can manually modify test functions from the test control panel. The optional security feature allows passwords and permissions to be set for each user. Permissions can be set based on the experience level of the user. This enables Scalar to have the power and flexibility to run difficult tests, while retaining the ease of operation and safety required for novice users.



# Low cost yet highly evolved

## Sophisticated Safety Features

Scalar provides extensive safety features to protect test equipment and the device under test. Its advanced realtime control algorithms and high signal to noise ratio guarantees that the controller will maintain proper testing levels by adapting quickly to dynamic structures. Expected peak displacement, velocity, and acceleration are compared to shaker limits prior to running the test. During Pretest, the system determines if the loop is open or closed for all control channels and reports if poor test conditions exist. The control signal is continuously compared against alarm and abort limits and, if the control signal drops out due to a dislodged accelerometer or broken cable, the system instantly aborts. The large external abort switch is connected directly to the control engine to ensure rapid safe shutdown under any circumstances.

## Comprehensive Test Documentation

Each time a test is run, Scalar automatically documents every event that occurs to ensure that all information pertinent to the current run is saved. At the beginning of the test, if Run Notes are enabled, up to eight user defined prompts can be displayed requiring the operator to enter key test identification information such as name, date, or test item serial number. During the test, information such as date and time of start, operator interactions, and reason for test ending are automatically recorded in the Run Log. When a test ends, Scalar stores all signals to record ending conditions. In addition, all scheduled and operator selected data Saves are linked to the Run and its documentation. With complete documentation, you can be certain all relevant information is always available for review and reports. Customized reports can be created with your own templates for headers and footers, and can include graphics, such as your company logo.



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Data Physics has been supplying high performance solutions in signal processing to the noise and vibration community for over 20 years. With the addition of a full line of electrodynamic shakers to complement its vibration controllers and dynamic signal analyzers, Data Physics is a total solution supplier for vibration applications.

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