# ObserVR1000™

## Portable Data Acquisition and Analyzer


**The Innovator in Sound and Vibration Technology**

VIBRATION RESEARCH

# WELCOME TO VIBRATION RESEARCH

Established in 1995, Vibration Research Corporation® (VR) is an American owned and operated company. VR is the innovator in vibration control and data acquisition. We listen to our customers' needs and offer testing products, software, and support that deliver unrivaled value. Our VR9500 controller with VibrationVIEW® software, our ObserVIEW® analysis software package, and our ObserVR1000™ data acquisition package include patented innovations used by in-house labs and contract testing labs. Our customers include engineers and technicians in aerospace, automotive, medical, military, packaging, transportation, and more sectors around the world. VR's applications solve troublesome industry issues such as test equivalency, end use environment comparisons, and test acceleration. VR has satellite offices in China, the Czech Republic, Germany, India, Russia, and the United Kingdom.

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At Vibration Research,
we believe ongoing support
is just as important as
the initial installation.

# ObserVR1000™ Portable Data Acquisition & Analyzer

Vibration Research's fully autonomous *ObserVR1000* data acquisition and analyzer is specially designed and engineered to provide superior value, including reliable performance, accurate testing, and user-friendly features.

## USER-FRIENDLY

The *ObserVR1000*™ does not require special boards, PC drivers, or even a PC. Ready to get started? Simply connect a smartphone, laptop, or PC and set up the *ObserVR1000*. Once set up, data can be collected with a simple press of the record button.

### Available Inputs

- 4 or 16 channels
- 2 encoder/tachometer channels
- Microphone - record verbal annotations with your data
- GPS - record all location data automatically during signal recording. Every waveform recording indicates time reference and location data from GPS.

### Customizable Reporting

All *ObserVR1000* systems can be used with VibrationVIEW® software which includes our full, robust reporting package. This automatically produces presentation-ready, sophisticated reports at the end of a testing sequence. Our customers have the choice of using one of our pre-packaged report templates – enabling users to enter important data such as technician, customer name, time, date, test parameters and more – or creating their own custom, branded reports.

### Drag and Drop

Enables customers to quickly load any graph or data into Microsoft® Word or Excel.

### Easy Integration

Easily interface by way of Active-X functions with applications such as Microsoft® Excel, LabVIEW, Matlab, and more.

## TIME-TESTED RELIABILITY

Vibration Research guarantees your satisfaction. Our *ObserVR1000* is meticulously designed and engineered for a high degree of reliability.

- Each analyzer includes a one-year hardware warranty
- Each analyzer is individually tested before shipping
- Each analyzer utilizes a common hardware platform and built-in hardware self-diagnostics, making troubleshooting a snap
- We actively solicit customer feedback; 90% of our enhancements originate from customer suggestions

### Economic Solution

Additional software may be acquired to add analysis functionality via an e-mailed key.

### PC and Windows Integration

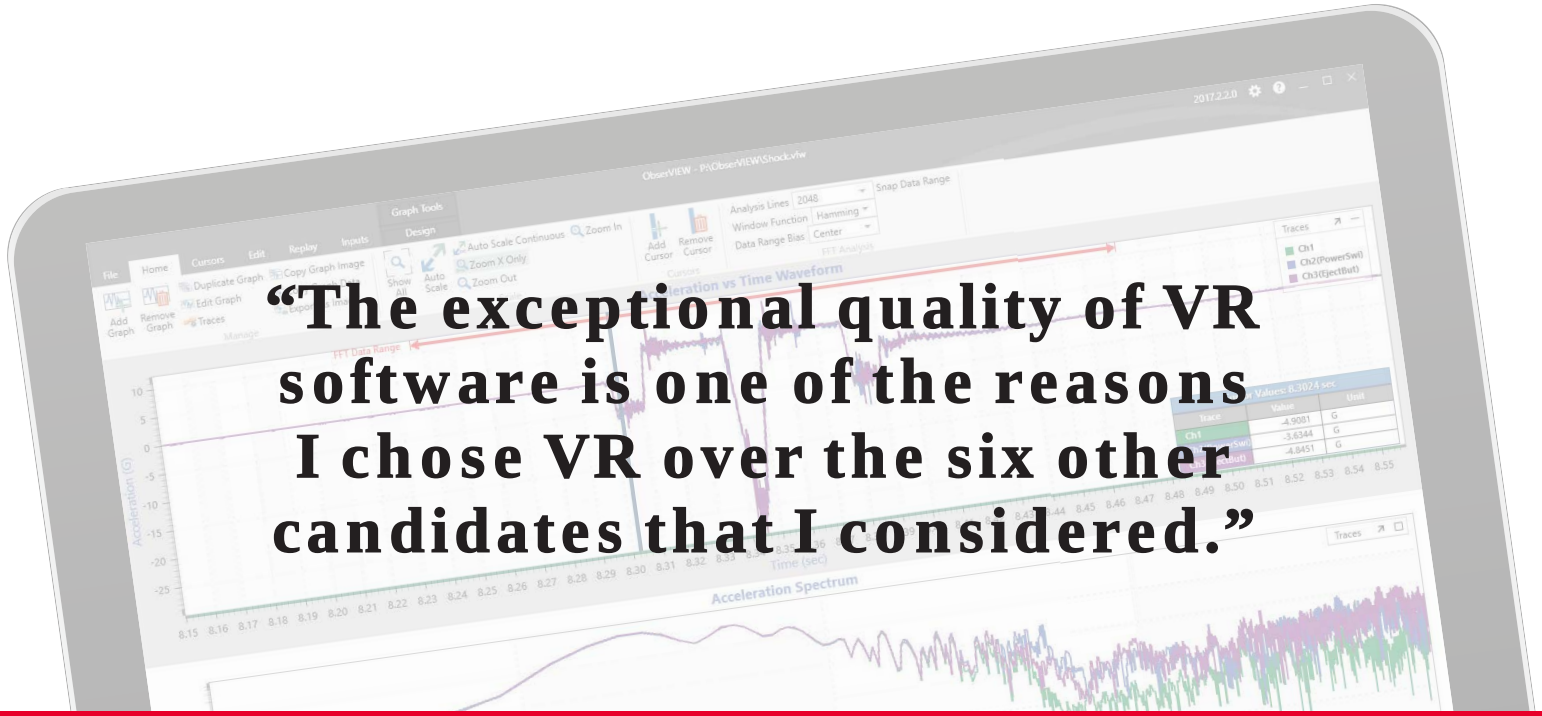
The *ObserVR1000* integrates seamlessly with the Microsoft® Windows operating system. Simply connect the *ObserVR1000*, load the included software, and you are ready to collect and analyze data.

### Wireless Connection

Setup and monitor the *ObserVR1000* without any wires. A handheld device becomes a remote interface into *ObserVIEW®*.

### Ethernet Connection

High speed gigabit connection




## HARDWARE FEATURES

The *ObserVR1000* uses state-of-the-art hardware including:

### Specifications At-A-Glance

- 4 or 16 simultaneous channels
  *(1 BNC input channel, 15 triaxial input channels)*
- 128kHz sample rate
- IEEE 1451.4 TEDS class 1
- IEPE signal condition *(2.1mA)*
- WiFi connection 802.11 b/g/n
- 6+ hour battery life
- GPS
- Tachometer inputs
- Gigabit Ethernet
- +/- 10V range
- < -100dB THD+N
- 24-bit Analog to Digital *(ADC)* converter
- >100dB dynamic range
- 40V tolerant inputs protects from transients
- Intuitive software set-up allows for:
  - Per channel selection of transducer sensitivity
  - 20 Volt range allows measurement to true DC IEPE type accelerometers with full frequency range

### Output Channels

- 1 analog output standard
- 24-bit Digital to Analog *(DAC)* converter
- < -100dB THD+N
- < -130dB Digital filter attenuation
- Analog multiple pole filter plus a digital filter
- Capability of up to 50,000Hz output frequency

### Input Channels Expansion

System can be expanded from 4 to 16 inputs by simply purchasing a software key.

## HARDWARE WARRANTY

Vibration Research warrants the *ObserVR1000* to be free of defects in materials and workmanship for a period of one year from the date of purchase. This warranty covers hardware failure under normal conditions and does not cover damage due to customer neglect or mistreatment.

### PC Configuration

Current Windows® operating system and wired or wireless ethernet are the only PC configuration requirements. Microsoft® Word and Excel are recommended.

### Inputs/Outputs

- The digital level signals – one input and one output – can be interfaced with your product or other systems
- Microphone
- Low-noise design with a dedicated high-speed processor for signal processing *(410nV/√Hz spurious free)*
- Front BNC connector for single axis and triaxial connectors for triaxial accelerometers
- +/- 10V Analog output
- 2 tachometer channels

### Other

- Size: 9.82" L x 6.33" W x 2.18" H
- Weight: 3.3lbs *(1.5kg)*
- Power: 100 to 240VAC, 50/60Hz, 1.5Amps
- Operating temperature range: -4°F to 131°F *(-20°C to 55°C)*

### Built-in Buttons

- Start/Stop Recording
- Event Marker

# SOFTWARE

Take intuitive test analysis from the field to a PC to make sense of the recorded data, and produce graphs that give real insight into physical behaviors.

## SOFTWARE FEATURES

**RecorderVIEW** *(Standard)*
Record your field acceleration measurements directly to the *ObserVR1000* hard drive.

**Transient Capture** *(Standard)*
Capture a transient waveform for post processing. Use alone for data acquisition, or with SRS for Shock Response Spectrum analysis.

**Analyzer** *(Standard)*
Live FFT, PSD, ESD

**Advanced Analyzer** *(VR1607)*
Cross Spectrum, Transfer Function, Coherence

**Fatigue Damage Spectrum** *(VR1209)*
Measure your product environment, characterize the severity, and generate a test profile accelerated to represent a lifetime of fatigue in a lab run test.


**Shock Response Spectra** *(VR1302)*
Perform Shock Response Spectrum analysis:

- SRS Pseudo Velocity
- SRS Acceleration plots
- Acceleration for primary (+), primary (-), or Maxi-Max. Graphs can be easily auto-scaled or zoomed, and cursors displayed
- Data and text annotations can be easily placed on the graphs, with data values updated live as the data changes

**Field Data Replication** *(VR9400)*
Take your field acceleration measurements and reproduce them on the shaker in your test lab with the VR9500 controller.

**Graphs**
*ObserVIEW* has an easy-to-use graphing system that includes auto-scaling and zooming capabilities. Graph images and raw data can be copied to any word processor or spreadsheet.

**Data Plots**
*ObserVIEW* software allows for many graphical display options:

- Acceleration spectral density
- Historical data logging
- Real-time channel acceleration

**Data Cursors**

- Automatically locate and track peaks and valleys
- Highlight particular data points
- Calculate RMS between frequencies
- Calculate slopes in log or linear plots
- Find harmonics of resonances

**Data Storage**
All of the test data can be stored to any disk, including an SD Card or network drive, for later retrieval.

**VFW Editor** *(Standard)*
View and edit recorded waveforms in the field or at your desk.

## ADDITIONAL FUNCTIONS

### Confidence in Your Field Recording
TEDS capable *ObserVIEW* software means your confidence level will be at an all-time high during your day-to-day recording.

### Repetitive Shock
- Determine if the table RMS energy is applied to resonances that cause the actual failures
- Evaluate and compare repetitive shock HALT/HASS to standards written for Electro-Dynamics shakers
- Compare HALT to end-use environment – eliminate over and under testing

### Dynamic Signal Analysis
Live FFT to analyze issues on the spot with phone or tablet

### Shaker Health
Maintain shaker performance history. Diagnose failed flexures, damaged armatures, blown modules, and more.

### Compare End-use Environments
- Envelop multiple end-use environments into a single test
- Create a gaussian random test that reflects all the fatigue your product will experience
- Add Kurtosion to better reflect actual peaks present in the end-use environment
- Compress test times to save testing budgets
- Determine over-testing failures by comparing to end-use environments
- Create screening tests to evaluate fixes for known failures

### Tachometers
- Include velocity and position data with vibration waveforms
- Locate harsh conditions that create failures on assembly lines
- Find vibration anomalies during run-up and run-down to prevent failures from stopping production

### GPS
Synchronize time with all your equipment using GPS and include location, velocity, and direction with dynamic waveforms.

### Synchronized Video
- Synchronize video with recorded waveforms
- Include multiple digital action cameras for more angles
- Use the video to provide context solve difficult problems

# FURTHER APPLICATIONS

## SOFTWARE HIGHLIGHTS

### RecorderVIEW (Standard)

The *ObserVR1000* does not require special boards, PC drivers, or even a PC. Ready to get started? Simply connect a handheld device or PC to set up the *ObserVR1000*. Once set up, data can be collected with a simple press of the record button. Stream all the inputs and outputs to the SD card while running other test modes or use independently as a field data recorder.

**Long Waveforms**
Collect waveforms up to 4 billion samples per channel. Waveforms can be over 22 hours long at a 52,000Hz sampling rate, over 100 hours long at a 10,000Hz sampling rate, and over 365 days long at a 100Hz sampling rate!

**Complete Integration with Field Data Replication**
Use the test wizard in VibrationVIEW's optional Field Data Replication software (VR9400) to proceed directly from field measurements to a test reproducing these measurements in your lab. No additional calibration or translation steps are required. Simply record the data and immediately run it on the shaker in your test lab.

**Integration with Random**
Collect your field acceleration measurements, and automatically convert the time waveforms into random shaker tests using VibrationVIEW's optional Random Import function (VR9204).

**Data Plots**
Many graphical display options are available, including all of the graphs available within the standard *ObserVIEW* software packages.

**Waveform Editor**
Edit your collected data - especially useful when the data has long "quiet" periods that are unwanted in the final data file.

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### FATIGUE DAMAGE SPECTRUM (VR1209)

Measure your product's environment, characterize the severity, and generate an accelerated test profile to represent a lifetime of fatigue in a lab run test. For years, people have used methods to calculate the lifespan of a product based on the material s/n curve. Rain flow cycle counting is applied to the actual measured vibration experienced by your product, lifetime fatigue damage is estimated, and an accelerated test is generated to reproduce a lifetime of damage in a short period of time.

**Custom Frequency Axis**
Normally Random Import is calculated linearly based on number of lines. Typically, FDS is calculated on a logarithmic frequency axis. You can set the frequency axis spacing and the start/end frequency on the user interface. User is in control of how many points and which points to calculate.

**Time Domain Calculation**
Calculation through time domain – not frequency domain – to account for kurtosis you will likely see in the real world. The Fatigue Damage Spectrum is based on the response of single degree of freedom systems rather than FFTs.

**Includes Random Import**
Compare multiple methods of generating a Random profile.

**Display Imported File Statistics**
Displays peak acceleration, velocity, and displacement, as well as the kurtosis of the time history file. This provides a quick and easy way to determine the statistics of a waveform.

**Configurable Process Parameters**
The user can define the slope of the s/n curve (beta) and quality factor (Q).

**Reduce Test Time**
User sets test item target life, based on product specifications, as well as test duration. The VibrationVIEW software automatically accelerates the profile to produce the same amount of fatigue damage in shorter test time.

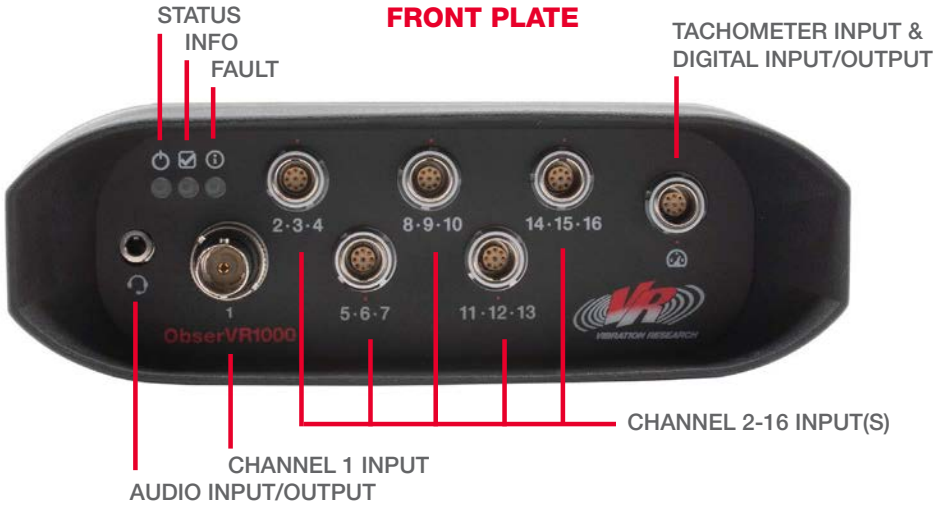
**Analysis to Control**
Transform your new Random breakpoints into a control profile with one mouse click. Go from a time waveform to a breakpoint profile and record, create, and control that profile all in one program.

### OTHER FEATURED OPTIONS

**FDS Stand Alone Software (VR9209-SA)**
Perform fatigue analysis and profile generation. Includes Random Import (VR9204) and ability to adjust kurtosis of overall random profile.

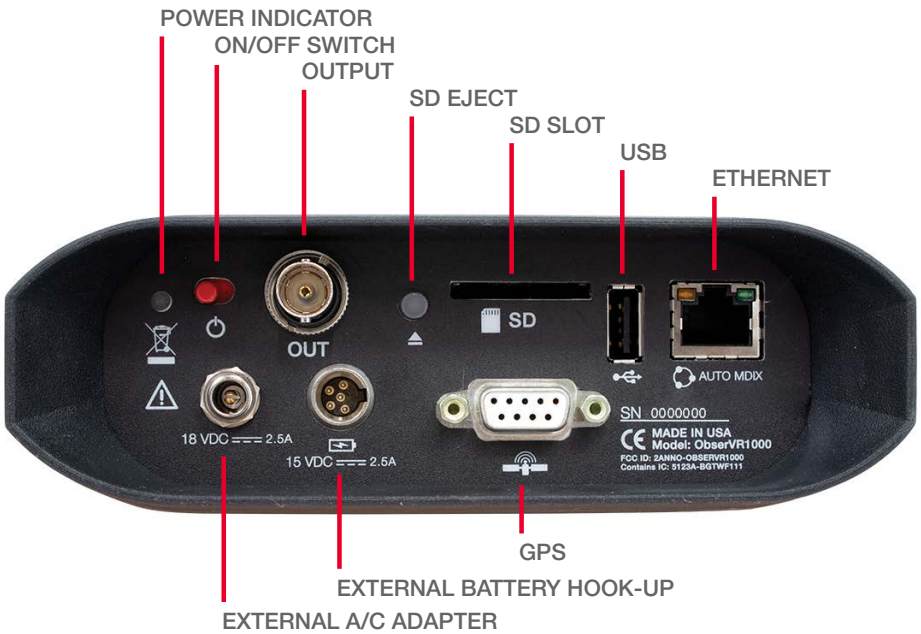
# ObserVR1000™ HARDWARE

## FRONT PLATE




## TOP


## BACK PLATE



# CUSTOMER SUPPORT

At Vibration Research, we believe ongoing support is just as important as the initial installation. We include a one-year hardware warranty with the *ObserVR1000*. In addition, we include one year of unlimited factory support to be sure you get everything you want and need from your data acquisition system. *ObserVIEW* provides context-sensitive help, which is a great place to explore the many features of our software.

## ADDITIONAL TRAINING AND SUPPORT

Vibration Research provides year-round live and on-demand support and training options including:

- Dedicated customer support team
- Upgrades and support agreements
- Topic-specific monthly web seminars
- Vibration Research University (VRU), a knowledge sharing community
- One-on-one web training
- On-site and off-site training
- Two-day training seminars
- Calibration verification services

## LOCATIONS www.VibrationResearch.com/contact

We have offices and sales representatives strategically located around the world. We invite you to contact a representative in your local area to request more information. Be sure to ask about a demo-version of our VibrationVIEW software.

**REPRESENTATIVES**

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Brazil
Bulgaria
Canada
Croatia
Denmark
Estonia
Finland
France
Hungary
Indonesia
Israel
Italy
Japan
Korea
Latvia
Lithuania
Malaysia
Mexico
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Norway
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Poland
Portugal
Romania
Serbia
Singapore
Slovakia
Slovenia
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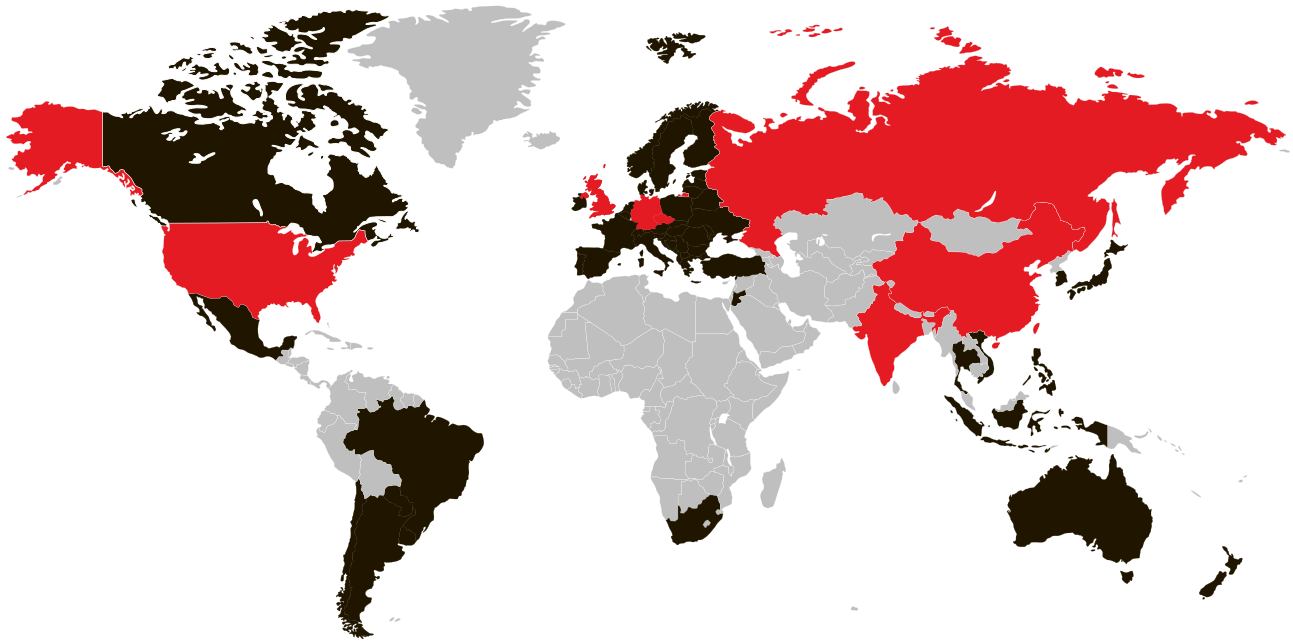

# “For every failure, there is a test which will find the failure.”

JOHN VAN BAREN


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