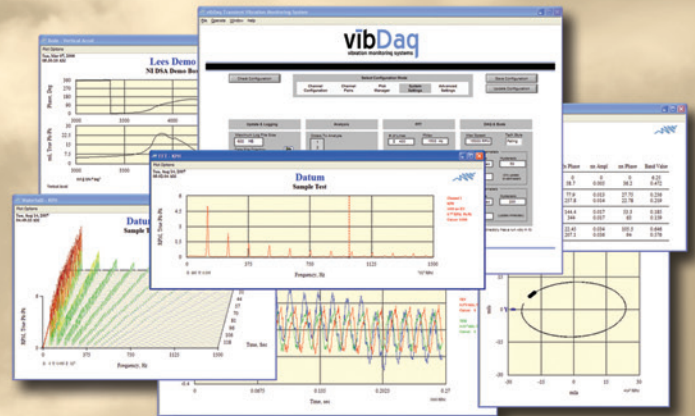




**CAL-BAY SYSTEMS**  
Solutions for Test, Measurement & Automation



**vibDAQ**  
vibration monitoring systems

# vibDaq Your Vibration Monitoring Solution

*PC-Based, Vibration Analysis Solutions that acquire, analyze, log and broadcast vibration data*

vibDaq is a versatile, low-cost, PC-based product which allows for sophisticated vibration monitoring and analysis without the expense of a fixed functionality box instrument.

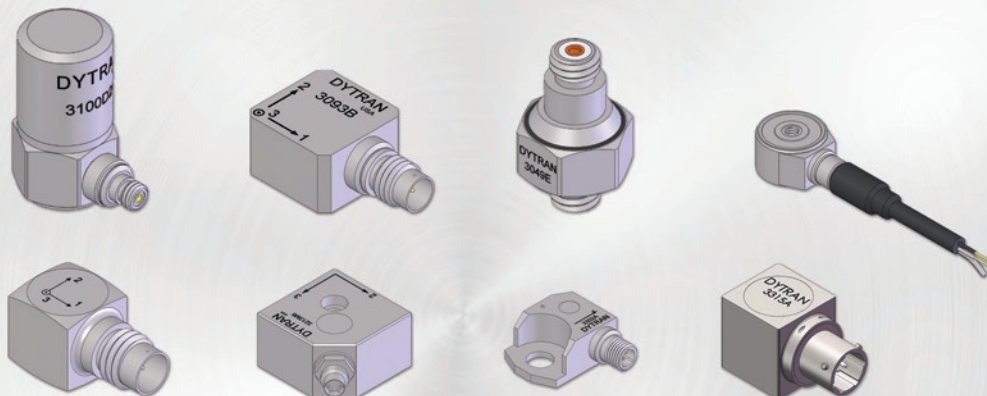
Predictive Maintenance is fast earning a reputation as the most time- and cost-efficient approach to managing the life-cycle of rotating mechanisms like turbines, motors, pumps, compressors and related systems (gears, bearings, etc). Engineers specify the operating characteristics and tolerances of these systems during the design phase. Excessive vibration is a key indicator of potential problems.

By continually monitoring operating variables against design specs, observers can watch vibration characteristics devolve and predict failure – before it happens. Instead of enduring the downtime associated with unnecessary periodic maintenance or unanticipated failure, predictive maintenance allows repairs to be made as-needed.

At Cal-Bay, we've leveraged our expertise in test and measurement to offer a complete line of vibration monitoring and reporting services. These tools allow an operator to continually monitor rotating systems for compliance with design specifications during production testing, and in the field during real-time operations. Based on observed degradation rates, operators can define pass/fail criteria in the test cell, or plan for system downtime to minimize any disruption of operations. Adopting a predictive 'as-needed' approach saves significant time and money.

The vibDaq Solution is a range of vibration analyzers and machine condition monitoring systems developed by Cal-Bay Systems.

Applications include: shaft rotation characterization, rotating machinery testing, bearing analysis, structural testing, real-time machine condition monitoring, etc.



# vibDaq Transient

## Designed to allow easy data collection and reporting for rotating machinery during transient events

- Startup and coast down
  - Order tracking (amplitude and phase)
  - Overall and gap voltage
- Digital wave form recording (stream to disk)

## Easy data presentation from data files to produce common plots such as:

- Bode, Polar, Shaft Center line, and Waterfall

## Supported Probe Types

- Proximity probes (Radial Vibration, Thrust Position, or Tachometer)
- Accelerometers (with IEPE provided)
- Velocity probe
- Optical tachometer
- Other (any voltage output sensor within the input voltage range)

## National Instruments LabVIEW® based application

## Supports National Instruments Dynamic Signal Acquisition Products

Available Plots–Waveform, FFT, Orbit, Bode, Polar, Shaft Centerline, Waterfall, Feature Table, Trend



## Hardware Options

	compactDAQ Based	PXI Based
Channel Count	4 to 32	8 to 56
Acquisition Rate	Up to 51.2 kHz per channel	Up to 102.4 kHz per channel
Acquisition Method	Simultaneous	Simultaneous
A/D Resolution	24 bits	24 bits
Input Ranges	±5 volts	±10 volts or ±31.6 volts
Input Coupling	AC or DC	AC or DC
IEPE Power	Software selectable per channel	Software selectable per channel
Antialiasing Filter	Yes	Yes

# vibDaq Continuous Monitoring (CM)

## Designed to view, log and analyze vibration data from rotating machinery

### Plots generated from live or logged data in floating windows

- View any number of Waveform, FFT, Waterfall, Bode, Polar, Orbit, Shaft Centerline, Trend and Tabular Summary plots

### Event-based data logging, with buffer for pre-event recording

- Automatically stream time domain data to disk based upon user-defined triggers

### Easy-to-use configuration dialogs

- Save your data acquisition, logging, limit checking and view settings to configuration files

### Remote client operation

- View live data being acquired on another system across your network

### Integration of process data between test systems

- Send and receive data using OPC

### FPGA-based smart tachometer processing

- Automatically adjust to input signal characteristics in real time
- Samples tachometer waveforms at 200 ks/sec for enhanced phase resolution

## Utilization of hardware and software from National Instruments

- COTS hardware is reliable and low-cost (NI PXI-4472B and NI PXI-7833R)
- LabVIEW®-based application utilizes advanced toolkits for even-angle resampling and order tracking
- Modular code base can be customized to meet the specific needs of your application

### Supported probe types include:

- Proximity probes (radial vibration, thrust position)
- Accelerometers (with IEPE provided)
- Velocity probe
- Optical tachometer
- Other (any voltage output sensor within the input voltage range)



## Hardware

Vibration Channels	8 to 48
Tachometer Channels	8
Acquisition Rate	Up to 102.4 kHz per channel
Acquisition Method	Simultaneous
Analog to Digital Resolution	24 bits
Input Ranges	$\pm 10$ volts or $\pm 31.6$ volts
Input Coupling	AC or DC
IEPE Power	Software selectable per channel
Antialiasing Filter	Yes

# vibDaq RIO On-Line

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## Designed to acquire, analyze, log and broadcast vibration data in harsh industrial environments

### Utilizes cRIO hardware from National Instruments

- Features extreme industrial certifications and ratings:
  - -40 to 70 °C (-40 to 158 °F) operating temperature
  - 50 g shock rating
  - International safety, EMC, and environmental certifications
  - Class I, Division 2 rating for hazardous locations
  - Dual 9 to 35 VDC supply inputs, low power consumption (7 to 10 W typical)

- COTS hardware is reliable, low-cost and easily extendable (utilizes NI 9234, 9233 or 9215A DAQ cards)

## Performs online vibration monitoring to assess the health of your equipment

- Analyzes vibration characteristics in real time
- Checks values against user-defined alarm limits

## Communicates with external systems

- Provides analog and digital outputs to transmit process values and alarm states

## Integrates process data between test systems

- Sends and receives data using TCP/IP

## Leverages easy-to-use configuration dialogs

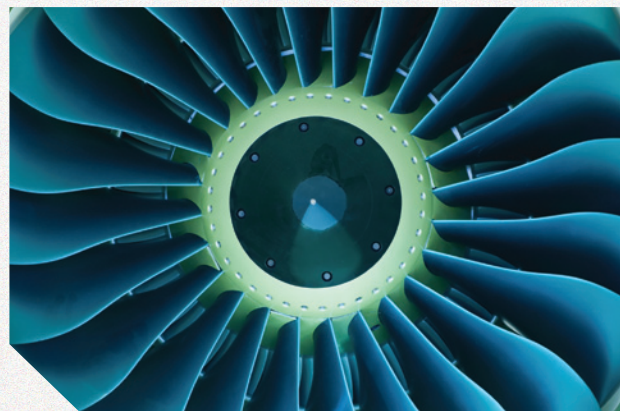
- Save your data acquisition, analysis, logging and alarming settings to configuration files

## National Instruments LabVIEW®-based application

- Utilizes advanced toolkits for vibration analysis
- Modular code base can be customized to meet the specific needs of your application

## Supports probe types including:

- Proximity probes, velocity probes, accelerometers
- Other (any voltage output sensor within the input voltage range)



## Hardware

Vibration Channels	4 to 32
Tachometer Channels	0 to 8
Acquisition Rate	Up to 51.2 kHz per channel with Antialiasing Filter
Acquisition Method	Simultaneous
Analog to Digital Resolution	24 bits
Input Ranges	±5 volts
Input Coupling	AC or DC
IEPE Power	Software selectable per channel
Alarm Outputs	Contact Closure



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