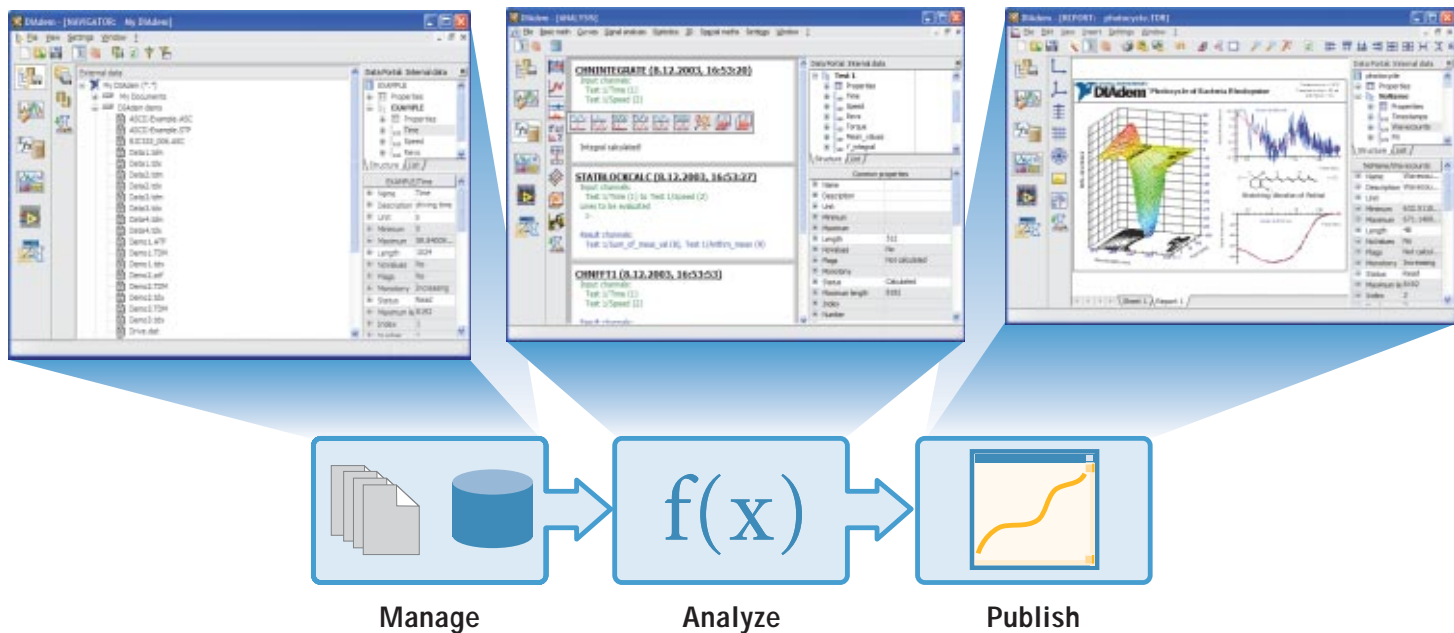


DIAdem

Ready-to-Run Data Analysis and Management Software – Make the Most of Your Data Investment

- *Data Management*
- *Graphical and Mathematical Analysis*
- *Report Generation*
- *Task Automation and Customization*
- *Data, Video, and 3D Model Visualization*

Move Efficiently from Test Data to Decision with NI DIAdem



Make the Most of Your Data Investment

Today, as a research or design engineer, you face the demand to design higher quality products faster than ever before. Though you can quickly validate designs and analyze the data from scientific tests, you may find storing and analyzing collected measurement data quite complicated. Often you store large amounts of data in different formats on numerous computers, making it extremely difficult to locate and analyze that data to improve product design. If you cannot find the data you need and are forced to rerun a test, you lose valuable time and your company loses money. In addition, because you often use several different tools to analyze and report the same data, you may introduce error into your data and inefficiencies into your organization.

As your design cycles shorten, you must find more efficient and effective ways to approach your everyday work. Designed for scientists and engineers, NI DIAdem provides all the tools you need to efficiently transform test data into the results that drive understanding and help you make critical decisions.

Get Faster and More Reliable Results from Your Test Data

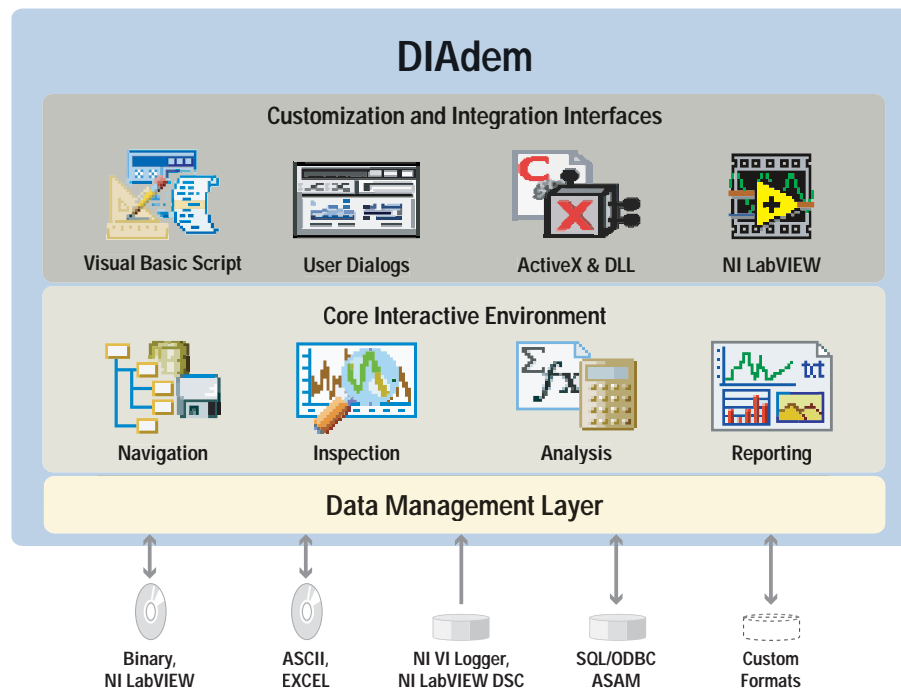
National Instruments DIAdem is an interactive tool for mathematical and visual data analysis, report generation, task automation, and data management. With DIAdem, you can use a single, unified environment to efficiently transform your test data into the results needed to drive engineering decisions. DIAdem includes a powerful data management interface that imports data from many different file formats and industry-standard databases and can handle data sets with over 2 billion values. In addition, you can use DIAdem tools to visually inspect and interactively analyze your data, as well as create publication-quality reports. With DIAdem, you can reduce reporting times, eliminate error through automation, and improve your understanding of your test data.

DIAdem includes a built-in Visual Basic Script (VBScript) host so you can automate your analysis, reporting, and data management tasks. You also can extend DIAdem through a DLL interface and exchange data and results with other industry-standard tools such as NI LabVIEW, The MathWorks MATLAB®, Mathematica, IDL, and Excel. The combination of its overall functionality, ease of use, and straightforward integration with existing software landscapes makes DIAdem the tool of choice for a wide range of industries.

“NI DIAdem has helped us reduce our overall analysis and reporting times as much as 90 percent. Our users are excited about the user friendliness, versatility and extensibility of DIAdem. In addition, our DIAdem power user group is continually finding new and exciting ways of applying DIAdem in some previously unexpected areas.”

*Damon Chandler
Knowledge Flow Architect
Cummins Engine*

DIAdem Delivers Personal and Organizational Productivity



DIAdem provides tools for interacting with your data and an automation interface you can use to customize DIAdem to your specific needs.



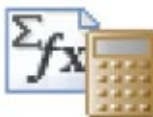
Managing Your Test Data

Today's measurement systems are becoming increasingly more complex as the demands of testing and verification grow. As a result, you end up storing valuable engineering data in a variety of formats across numerous locations. Using the intuitive DIAdem interface, you can locate and manage data in several formats and locations by connecting to databases and reading ASCII, binary, and Excel files.



Inspecting Your Test Data

Visual data inspection helps you investigate why certain events happen during your tests. You can use DIAdem to correlate several test runs and visually compare results. You also can zoom in, scroll across, and interactively analyze graphs of your measurements to gain a better understanding of your engineering processes.



Analyzing Your Test Data

When you load your data into DIAdem, you can use all of the built-in tools for mathematical and visual analysis to turn the raw measurements into results. With interactive DIAdem analysis libraries, you can analyze data using a wide range of mathematical functions.



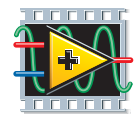
Reporting Your Results

Communicating results via reports is a key step in any engineering process. Consistent reports give your organization and your customers a better understanding of the engineering process and the progress of your work. DIAdem offers an easy-to-use, graphical, drag-and-drop environment for creating reports that you can share and reuse throughout your organization.



Automating Your Analysis and Reports

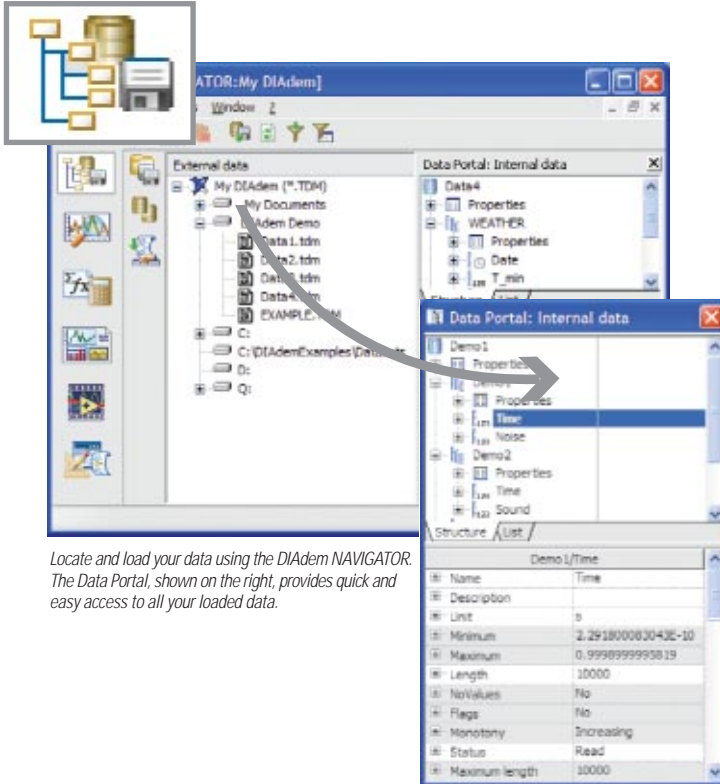
When you have identified common procedures and templates for your analysis and reporting tasks, you can automate them using the VBScript engine built into DIAdem. With automation, you get results faster and eliminate the error associated with manual processes. Use DIAdem to create everything from simple sequences to powerful scripts, including customized user interfaces.



Connecting with your Measurements

With built-in tools for data acquisition, instrument control, user interface design, measurement analysis, and data visualization, LabVIEW makes it possible for you to design flexible, custom measurement and analysis applications without extensive programming experience. Using the LabVIEW/DIAdem connectivity Express VIs, you can create integrated applications that share data between LabVIEW and DIAdem. Take advantage of DIAdem to interactively visualize, analyze, and report your measurement data.

Manage and Inspect Your Data

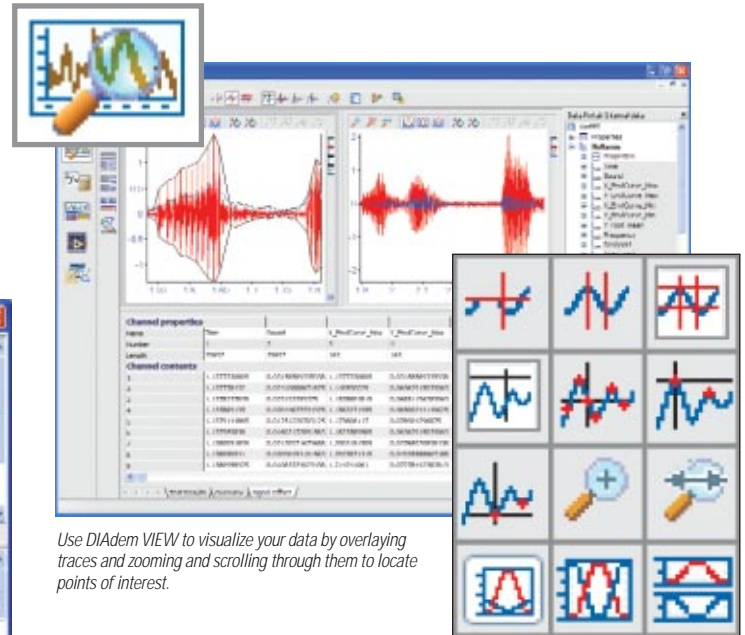


Managing Your Data

To convert test data into results, you must first locate and load your data. The DIAdem NAVIGATOR gives you flexible access to your data sources regardless of format or location. The NAVIGATOR displays all your data sources in a tree view, so you can easily locate your test data. Filters help you speed up the locating process and the Data Portal helps you keep track of your imported and analyzed data.

Key Data Management Features

- Manage your imported and analyzed data with the DIAdem Data Portal
- Load and manage over 2 billion data values in up to 65,535 columns simultaneously
- Import DAT, TDM, ASCII, binary, Excel, NI LabVIEW LVM, DIF, EGV, ERG, LAX, MME, TDF, RPC3, TEAC, nCode, ATF, WAV, and other file formats
- Navigate and load data directly from ASAM-ODS, NI VI Logger, LabVIEW Datalogging and Supervisory Control Module, and NI Lookout real-time databases
- Load data from standard read/write databases using the SQL, ODBC, ADO, and AOP (ASAM) protocols
- Export results to binary, ASCII, and Excel files and databases
- Create your own file import scripts or DLLs to read custom data formats
- Use built-in filters to locate your data files easily



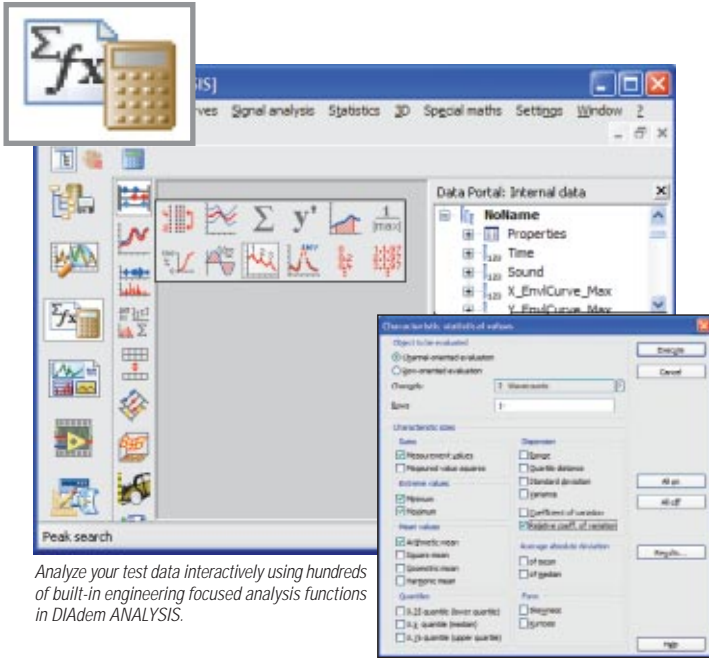
Inspecting Your Data

Interactively inspecting test data is critical in understanding what took place during a test. Often you know just by looking at the data if the test was a success or failure. In addition, being able to overlay several test runs and visually correlate the results gives you the insight necessary to make key decisions. In DIAdem VIEW you visually inspect your data and draw conclusions by interacting with it in both tabular and graphical forms. You use scroll and zoom cursors to identify peaks and features in your data and different cursor options to graphically delete, fit, or copy ranges of data.

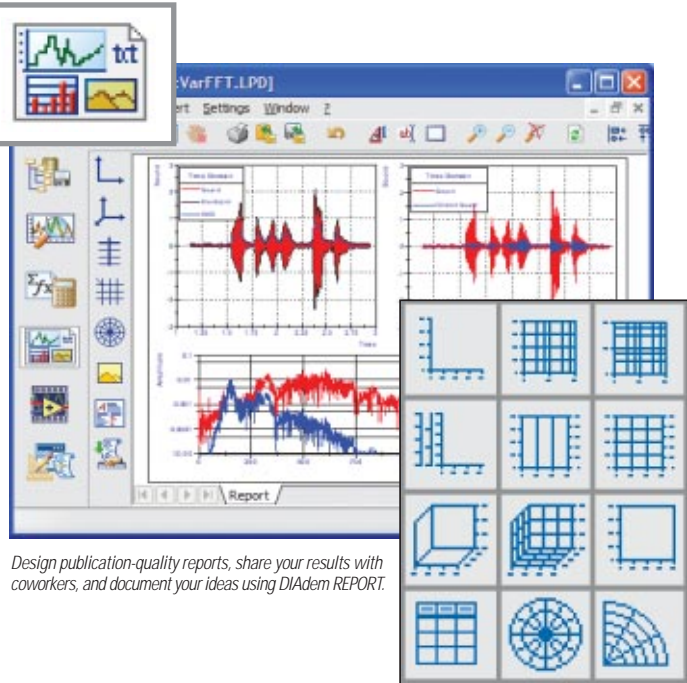
Key Data Inspection Features

- Create custom layouts to display data in a way that makes the most sense for you
- Choose from 2D axis systems and data tables for data display
- Use zoom and scroll cursors to interactively inspect data
- Mark areas of data traces for copying, deleting, or curve fitting
- Use graph legends to display cursor-related data point values and data properties
- Create VIEW layouts with unlimited numbers of pages
- Visualize, zoom, scroll, and compare traces
- Save your VIEW layouts for future reuse

Analyze and Report Your Data



Analyze your test data interactively using hundreds of built-in engineering focused analysis functions in DIAdem ANALYSIS.



Design publication-quality reports, share your results with coworkers, and document your ideas using DIAdem REPORT.

Analyzing Your Data

DIAdem ANALYSIS offers a wide range of mathematical routines for analyzing your data. DIAdem separates analysis libraries into groups of similar functionality, and each analysis function has its own unique set of parameters. The DIAdem ANALYSIS functions are completely mouse-driven and require no additional scripting to analyze your data. With the formula interpreter, you can enter your own math functions interactively.

Key Data Analysis Features

- Use the formula interpreter for basic scientific functions including square root, sine, cosine, tangent, absolute value, and MOD
- Use tools for integration, differentiation, summation, peak search, root-mean-square, sorting, and averaging
- Calculate curve fits, running averages, and linear regressions
- Extract statistical information including standard deviation, variance, mean values, and minimum/maximum values
- Create histograms from your data
- Perform Fast Fourier Transforms (FFTs), coherence, transfer functions, auto and cross correlation, and digital filtering
- Design digital filters, including IIR and FIR, Bessel, Butterworth, Chebyshev, lowpass, highpass, bandpass, and bandstop
- Conduct 3D analysis using matrix interpolation, integration and calculation of isolines

Reporting Your Data

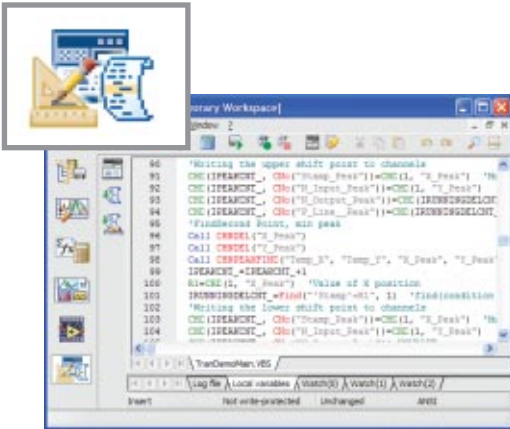
Sharing results with others and collaborating on projects requires that you communicate results clearly and concisely. With a drag-and-drop environment tailored for creating engineering and scientific reports, DIAdem REPORT makes it easy to present and share your results with coworkers. After creating a DIAdem REPORT template, save it to share with coworkers or to use with other data sets.

Key Reporting Features

- Design reports quickly using drag-and-drop report construction
- Create multipage reports containing any combination of 2D/3D-axis systems, polar coordinates, graphics, 2D/3D tables, text, embedded variables, and function calls
- Scale 2D or 3D graphs automatically or manually
- Display 2D graphs with up to 20 y axes
- Display data traces with lines, bars, symbols, spikes, differentials, and constants
- Create 3D graphs using surfaces, waterfalls, spikes, bars, contours, and color maps
- Generate Web-ready HTML reports
- Embed variables and function calls to create sophisticated reports
- Export reports to file formats including WMF, EMF, BMP, TIF, JPG, PNG, PCX, TGA, EPS, and others
- Print to any paper size
- Export reports to popular word processing or presentation software including Microsoft Office

For a complete list of DIAdem analysis functions visit ni.com/info and enter **diadem9**

Automate Reporting and Analysis Tasks



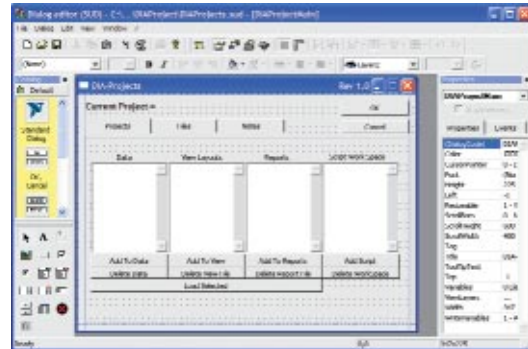
Automating repetitive reporting and analysis tasks saves you valuable time and places your focus on the results, not the process of creating them.

Automating Your Tasks with VBScript

Automating tasks saves time and money and lets you focus on analyzing results instead of the manual process of creating them. DIAdem SCRIPT uses a built-in VBScript host so you can create everything from a simple sequence of analysis functions to very complex interactive reporting solutions. You can create a script in DIAdem in two ways – by using the macro recording function or by writing code in VBScript. The macro recorder captures the steps you interactively perform in DIAdem in a script you save for later use. Use DIAdem to automate the analysis of data sets that require the same processing from run to run. For those analysis tasks that require some level of decision making as part of processing the data, VBScript offers normal programming constructs, such as loops and case statements, that you expect in a scripting language. DIAdem SCRIPT combines the power of DIAdem for managing, analyzing, and reporting test data with the flexible, easy-to-learn Windows scripting language.

Key Automation Features

- Use the macro recorder to create sequential analysis and reporting scripts
- Modify and extend your recorded scripts using the built-in script editor
- Take advantage of the powerful, easy-to-learn VBScript language and all of its standard programming constructs and interface support, such as ADO and ActiveX
- Implement complete DIAdem functionality through scripts, including retrieving and storing data, performing analysis functions, configuring VIEW and REPORT layouts, and printing reports
- Exchange data using comprehensive DIAdem functions for SQL/ODBC, ASAM-ODS, and other protocols
- Communicate with other programs such as NI LabVIEW, The MathWorks, MATLAB, IDL, and Mathematica
- Create your own user functions and register them in DIAdem as standard functions
- Use built-in debugging tools to develop and test your customized DIAdem solutions



By creating custom user dialogs, you can extend DIAdem to meet your specific needs.

DIAdem Customized User Interfaces

DIAdem scriptable user dialogs offer you an easy way to create user interfaces for your analysis process. With the VBScript-based user dialogs, you can create interfaces that consist of the common controls you would expect in a dialog editor such as buttons, check boxes, list boxes, tables, radio buttons, and ActiveX controls. With DIAdem user dialogs, you also can create your own custom interfaces and use them as part of your analysis or report generation solution. You can create custom math functions or a custom interface that guides users through a complex set of reporting steps.

Scriptable Dialog Features

- Design customer interfaces with common dialog controls such as buttons, list boxes, tables, and check boxes
- Use common events such as button click and event initialize
- Include ActiveX controls on your dialogs to extend the functionality



Extend your LabVIEW application with the LabVIEW DIAdem connectivity VIs.

Connectivity with NI LabVIEW

You can extend your LabVIEW measurement programs to take advantage of DIAdem post-test reporting capabilities by directly passing data between the two applications using the LabVIEW/DIAdem connectivity VIs. The VIs provide file I/O functions, direct control of DIAdem from LabVIEW, and the ability for DIAdem to pass data back to a LabVIEW application.

LabVIEW Connectivity Features

- Use LabVIEW Express VIs to create a fast connection between LabVIEW and DIAdem
- Extend LabVIEW applications to write the DIAdem binary data format
- Read DIAdem binary files into a LabVIEW application
- Control all aspects of DIAdem from a LabVIEW application

Implement Advanced Data Visualization

DIAdem CLIP and DIAdem INSIGHT

DIAdem CLIP and INSIGHT are stand-alone applications for synchronizing the visualization of test data with movie files and the projection of test data onto CAD models respectively. With DIAdem CLIP, you can find events in your data sets by visually inspecting your test video and simultaneously viewing the data acquired during the test.



Use DIAdem CLIP to view synchronized video and test data simultaneously.

Key DIAdem CLIP and INSIGHT features

- Stand-alone data and video synchronization tool
- Interactive configuration-based environment
- Multiple windows and zooming for video and data
- Native support for AVI and MPEG files
- Interactive video sequence positioning and scaling
- Selectable playback speeds
- Media Builder for sharing your DIAdem CLIP presentations

In addition to offering all the features found in DIAdem CLIP, DIAdem Insight gives you the ability to project measurement data onto a CAD model. Using DIAdem INSIGHT, you can import 3D models of your test object and assign acquired data from the sensors on the original object to that 3D model. The result is a representation of the test that changes color or displacement according to the values of the measurement data.

DIAdem INSIGHT Only features

- Supports MOD, FEM, and VRML model files
- Projects measurements on CAD models as displacements, movements, or color changes
- Offers interactive model rotation zoom and moves



DIAdem INSIGHT displays measurement data on 3D CAD objects.

DIAdem System Requirements

- PC with an Intel Pentium or Celeron family, or AMD K6/Athlon/Duron family, or compatible processor recommended
- Windows 2000/NT/XP
- 85 MB of available hard disk space
- 128 MB available RAM; more RAM increases program performance
- 1024 x 768 minimum color monitor with 16-bit color or greater video card (screen resolution of 1,024 x 768 recommended)

DIAdem Ordering Options

	Base	Advanced **	Professional ***
NAVIGATOR	✓	✓	✓
VIEW	✓	✓	✓
ANALYSIS	✓	✓	✓
REPORT	✓	✓	✓
SCRIPT	*	✓	✓
Analysis and Reporting Capabilities	Base Analysis Sort Channels Average Channels Summation Differentiation Integration Normalization Relativization Root Mean Square Peak Search No Values Generate Data Generate Time Data Smoothing Regression Linear Mapping Envelope Curve Statistical Values Reducing Classification	Advanced Analysis ** 3D Analysis Functions (3D arithmetic, 3D curve fitting, calculation of isolines, surfaces, and envelope curves) FFT, Inverse FFT Autocorrelation Cross Correlation Digital Filters Approximations Splines Advanced Reports ** 3D Axes, Tables (3D curves, vectors and surfaces, and isolines)	Professional Analysis *** Frequency Weighted Acceleration Circle Approximation Order Analysis One Parametrical Classification Compound Classification Rainflow Analysis

* Ability to run scripts only

** Contains all functions of the DIAdem Base Edition

*** Contains all functions of DIAdem Base Edition and DIAdem Advanced Edition

	Crash Analysis Toolset *	DIAdem CLIP **	DIAdem INSIGHT **
Vehicle Safety Analysis	✓		
Digital Filters	✓		
Data + Videos		✓	✓
Data + 3D CAD Models			✓

* Requires Base, Advanced, or Professional Edition of DIAdem

** Stand-alone software does not require Base, Advanced, or Professional Edition of DIAdem

Crash Functions Included in Crash Analysis Toolset

The DIAdem Crash Toolset contains a set of proven vehicle safety test analysis functions that you can access interactively through DIAdem ANALYSIS. These functions comply with various international standards, such as ISO, SAE, NHTSA, FMVSS, and ECE. You can easily combine these functions with all the existing analysis, report generation, and automation features of DIAdem to create a completely automated and standardized vehicle safety test analysis system.

- Head Injury Criterion (HIC)
- Head Contact Duration (HCD)
- X-g values
- Neck Injury Criterion Rear Impact
- Viscous Criterion Values (VC)
- Femur Force Criterion (FFC)
- Theoretical Head Impact Velocity (THIV)
- Acceleration Severity Index (ASI)
- Occupant Ridedown Acceleration (ORA)
- Post-Impact Head Deceleration (PHD)
- Average Acceleration During Compression (Acomp)
- Head Performance Criterion (HPC)
- X-ms values
- Neck Injury Criterion (NIC)
- Neck Injury Criterion Value (NIJ)
- Thorax-Trauma-Index Value (TTI)
- Tibia Index (TI)
- Crash Minimum/Maximum
- Occupant Impact Velocity (OIV)
- Digital Filtering
- Pulse Limit Corridor
- Resultant Calculation

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NI has the services and support to meet your needs around the globe and through the application life cycle – from planning and development through deployment and ongoing maintenance. Our services and support resources are tailored for customer requirements in research, design, validation, and manufacturing. Visit ni.com/services for details.



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Our Standard Software Service ([visit ni.com/ssp](http://ni.com/ssp)) provides maintenance services to one DIAdem user for one year. Program benefits include regular and automatic software upgrades and updates, one-to-one e-mail or phone support, and a 10 percent discount on individual training courses. We offer volume pricing with our Volume License Program ([visit ni.com/vlp](http://ni.com/vlp)), which equips your group or organization with software asset management tools and provides access to current versions of DIAdem software.

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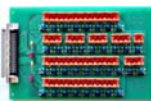
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Gerätebau



Sensoren



Anschluss technik



Module



Datenlogger



Messkoffer



Temperatur



ISO-Verstärker



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