

DIAdemTM

DIAdem-INSIGHT Manual

Worldwide Technical Support and Product Information

ni.com

National Instruments Corporate Headquarters

11500 North Mopac Expressway Austin, Texas 78759-3504 USA Tel: 001 512 683 0100

Worldwide Offices

Australia 03 9879 5166, Austria 0662 45 79 90 0, Belgium 02 757 00 20, Brazil 011 284 5011,
Canada (Calgary) 403 274 9391, Canada (Ontario) 905 785 0085, Canada (Québec) 514 694 8521,
China 0755 3904939, Denmark 45 76 26 00, Finland 09 725 725 11, France 01 48 14 24 24,
Germany 089 741 31 30, Greece 30 1 42 96 427, Hong Kong 2645 3186, India 91805275406,
Israel 03 6120092, Italy 02 413091, Japan 03 5472 2970, Korea 02 596 7456, Mexico (D.F.) 5 280 7625,
Mexico (Monterrey) 8 357 7695, Netherlands 0348 433466, Norway 32 27 73 00, Poland 48 22 528 94 06,
Portugal 351 1 726 9011, Singapore 2265886, Spain 91 640 0085, Sweden 08 587 895 00,
Switzerland 056 200 51 51, Taiwan 02 2377 1200, United Kingdom 01635 523545

For further support information, see the *Technical Support* appendix. To comment on the documentation, send e-mail to techpubs@ni.com

Copyright © 2001 National Instruments Corporation. All rights reserved.

Important Information

Warranty

The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. National Instruments will pay the shipping costs of returning to the owner parts which are covered by warranty.

National Instruments believes that the information in this document is accurate. The document has been carefully reviewed for technical accuracy. In the event that technical or typographical errors exist, National Instruments reserves the right to make changes to subsequent editions of this document without prior notice to holders of this edition. The reader should consult National Instruments if errors are suspected. In no event shall National Instruments be liable for any damages arising out of or related to this document or the information contained in it.

EXCEPT AS SPECIFIED HEREIN, NATIONAL INSTRUMENTS MAKES NOWARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER'S RIGHT TO RECOVER DAMAGES CAUSED BY FAULT OR NEGLIGENCE ON THE PART OF NATIONAL INSTRUMENTS SHALL BELIMITED TO THE AMOUNT THERETOFORE PAID BY THE CUSTOMER. NATIONAL INSTRUMENTS WILL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. This limitation of the liability of National Instruments will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against National Instruments must be brought within one year after the cause of action accrues. National Instruments shall not be liable for any delay in performance due to causes beyond its reasonable control. The warranty provided herein does not cover damages, defects, malfunctions, or service failures caused by owner's failure to follow the National Instruments installation, operation, or maintenance instructions; owner's modification of the product; owner's abuse, misuse, or negligent acts; and power failure or surges, fire, flood, accident, actions of third parties, or other events outside reasonable control.

Copyright

Under the copyright laws, this publication may not be reproduced or transmitted in any form, electronic or mechanical, including photocopying, recording, storing in an information retrieval system, or translating, in whole or in part, without the prior written consent of National Instruments Corporation.

Trademarks

ComponentWorks™, DAQPad™, DataSocket™, DIAdem™, DIAdem-INSIGHT™, DIAdem-CLIP™, HiQ™, HiQ-Script™, IVI™, LabVIEW™, National Instruments™, ni.com™, NI-DAQ™, PXI™, and SCXI™ are trademarks of National Instruments Corporation.

Product and company names mentioned herein are trademarks or trade names of their respective companies.

WARNING REGARDING USE OF NATIONAL INSTRUMENTS PRODUCTS

(1) NATIONAL INSTRUMENTS PRODUCTS ARE NOT DESIGNED WITH COMPONENTS AND TESTING FOR A LEVEL OF RELIABILITY SUITABLE FOR USE IN OR IN CONNECTION WITH SURGICAL IMPLANTS OR AS CRITICAL COMPONENTS IN ANY LIFE SUPPORT SYSTEMS WHOSE FAILURE TO PERFORM CAN REASONABLY BE EXPECTED TO CAUSE SIGNIFICANT INJURY TO A HUMAN.

(2) IN ANY APPLICATION, INCLUDING THE ABOVE, RELIABILITY OF OPERATION OF THE SOFTWARE PRODUCTS CAN BE IMPAIRED BY ADVERSE FACTORS, INCLUDING BUT NOT LIMITED TO FLUCTUATIONS IN ELECTRICAL POWER SUPPLY, COMPUTER HARDWARE MALFUNCTIONS, COMPUTER OPERATING SYSTEM SOFTWARE FITNESS, FITNESS OF COMPILERS AND DEVELOPMENT SOFTWARE USED TO DEVELOP AN APPLICATION, INSTALLATION ERRORS, SOFTWARE AND HARDWARE COMPATIBILITY PROBLEMS, MALFUNCTIONS OR FAILURES OF ELECTRONIC MONITORING OR CONTROL DEVICES, TRANSIENT FAILURES OF ELECTRONIC SYSTEMS (HARDWARE AND/OR SOFTWARE), UNANTICIPATED USES OR MISUSES, OR ERRORS ON THE PART OF THE USER OR APPLICATIONS DESIGNER (ADVERSE FACTORS SUCH AS THESE ARE HEREAFTER COLLECTIVELY TERMED "SYSTEM FAILURES"). ANY APPLICATION WHERE A SYSTEM FAILURE WOULD CREATE A RISK OF HARM TO PROPERTY OR PERSONS (INCLUDING THE RISK OF BODILY INJURY AND DEATH) SHOULD NOT BE RELIANT SOLELY UPON ONE FORM OF ELECTRONIC SYSTEM DUE TO THE RISK OF SYSTEM FAILURE. TO AVOID DAMAGE, INJURY, OR DEATH, THE USER OR APPLICATION DESIGNER MUST TAKE REASONABLY PRUDENT STEPS TO PROTECT AGAINST SYSTEM FAILURES, INCLUDING BUT NOT LIMITED TO BACK-UP OR SHUT DOWN MECHANISMS. BECAUSE EACH END-USER SYSTEM IS CUSTOMIZED AND DIFFERS FROM NATIONAL INSTRUMENTS' TESTING PLATFORMS AND BECAUSE A USER OR APPLICATION DESIGNER MAY USE NATIONAL INSTRUMENTS PRODUCTS IN COMBINATION WITH OTHER PRODUCTS IN A MANNER NOT EVALUATED OR CONTEMPLATED BY NATIONAL INSTRUMENTS, THE USER OR APPLICATION DESIGNER IS ULTIMATELY RESPONSIBLE FOR VERIFYING AND VALIDATING THE SUITABILITY OF NATIONAL INSTRUMENTS PRODUCTS WHENEVER NATIONAL INSTRUMENTS PRODUCTS ARE INCORPORATED IN A SYSTEM OR APPLICATION, INCLUDING, WITHOUT LIMITATION, THE APPROPRIATE DESIGN, PROCESS AND SAFETY LEVEL OF SUCH SYSTEM OR APPLICATION.

Contents

1 Overview

1.1	Screen Structure	1-1
1.2	Tool bar	1-3
1.3	Player bar	1-3
1.4	Data source	1-4
	The AVI files tab	1-5
	The DIAdem files tab	1-5
	The Picture files tab	1-5
	The Online data tab	1-5
	The Model files tab	1-6
	The Info tab	1-6
1.5	Model window	1-6
1.6	Axis system	1-8
1.7	Video window	1-8

2 Presentation

2.1	Moving, rotating and zooming a model and optimizing the viewing angle	2-1
	Zooming a model	2-2
	Optimize the viewing angle on a measurement point	2-2

3 Working with DIAdem-INSIGHT

3.1	Defining color shading	3-1
3.2	Defining a deformation	3-3
3.3	Defining a rigid body displacement	3-5
	Definition of a new local coordinate system:	3-5
	Assignment of points to a new, local coordinate system	3-7
	Deleting a local coordinate system	3-7

3.4 The illumination of a scene	3-8
3.5 Defining an information node	3-9
3.6 Marking points in a model	3-9
3.7 the model window coordinate system.....	3-10

4 Inserting Synchronized Videos

Videos	4-1
Video and curves.....	4-1
Synchronization parameters	4-1
Active window.....	4-2

5 Saving Presentation and Creating Templates

5.1 Presentation mode.....	5-1
----------------------------	-----

1 Overview

With DIAdem-INSIGHT, you can map your measurement data to the measurement object. To see the spatial context, link the data channels directly with the points on a relevant grid model. In every phase of your evaluation, you can freely rotate and zoom the model.

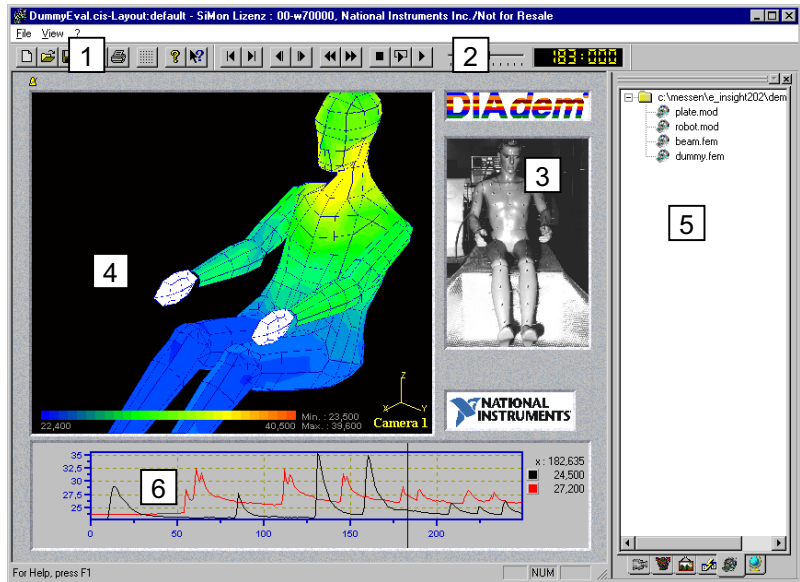
In DIAdem-INSIGHT, you determine whether the data is to be displayed as a deformation or color shading of the grid model. In addition, the data can also be displayed in the form of curves and synchronized with the projection to the model. Thus, as you move the mouse over the curves, the depiction of your model changes. In addition, in parallel to these sequences, you can have videos run in a separate window.

1.1 Screen Structure

Data is displayed onto a 3D model in one or more model windows. The measured data appears as curves in axis systems. Both objects are arranged in the presentation area and can be stored with additional graphics as a Layout. Bitmaps can be added to enrich the presentation with the company logo or a photo of the object of research. All types can be combined with each other as desired.

The data is displayed in DIAdem-INSIGHT similarly to the Windows explorer, in what we call the data sources. From here, the data can be dragged and dropped into the presentation area. The view is displayed on the right edge of the DIAdem-INSIGHT window.

The DIAdem-INSIGHT window consist of the Presentation area at the left and the Data source at the right. Above are the tool bar and the player bar for loading and controlling the presentation. Some elements can be hidden using the View menu.



(1) **TOOL BAR:** With standard functions such as loading and saving a layout, grid, help function. (2) **PLAYER BAR:** The Player is used to animate the data projection as color shading or displacement onto the 3D model. (3) **BITMAP:** Enrich the presentation, e.g. with your logo (4) **MODEL WINDOW:** You define one or more to compare. The projection can be done as color shading or displacement. (5) **DATA SOURCE:** You can switch the data, graphics, video, model files and online data, info by clicking the buttons at the bottom edge of the window. (6) **AXIS SYSTEM:** Showing one or more data curves simultaneously with the shading / displacement onto the model.

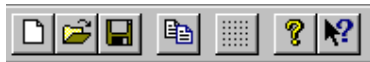
The objects in the presentation area are activated with a mouse click at the frame. Axis systems and model window are activated, moved, adjusted in size and deleted with the mouse. The mouse cursor is the customer's right hand in the system.

A new window can be inserted from the Data Sources, by dragging the particular data channel or model and dropping it onto the report generation area. Data channels can also be added to axis systems in this way.









The structure of the presentation area, i.e. the arrangement of the individual components in the window, is called a layout. If data is assigned to a layout, it is called a scene. The scene can then be saved. Alternatively, the layout of the report generation area can be saved in order to be used as the basis for further evaluations.

The evaluation is executed either with the mouse using the Player functions or synchronously by moving the cross-hair cursor in the axis system.

1.2 Tool bar








In the tool bar, the frequently used functions are arranged in symbolic form. Brief help for the command that is linked to the selected icon is also displayed, as well the tool tips in the status line. The toolbar can be displayed or suppressed from the view menu (cf. Presentation mode).

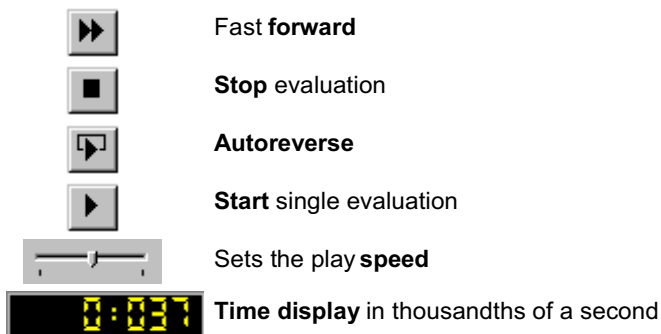
-  **Deletes** a scene, creates a default layout
-  **Loads** a scene
-  **Saves** a scene
-  Transfers the display to the **Clipboard**
-  **Print** layout
-  Switches **grid** on/off
-  Activates the **info** for the current version
-  Activates the context **help**

1.3 Player bar



The Player bar can be used to access the required animation in the model window, which is marked by a yellow metronome. All the other model windows are automatically positioned as well. The appropriate position on the curve is marked by a vertical line, in all axis systems.

-  Go to the **Start** of the video sequence(s)
-  Go to the **End** of the video sequence(s)
-  **Rewind** a picture
-  **Forward** a picture
-  Fast **rewind**



1.4 Data source



In the data sources you can list and drag&drop different file types:

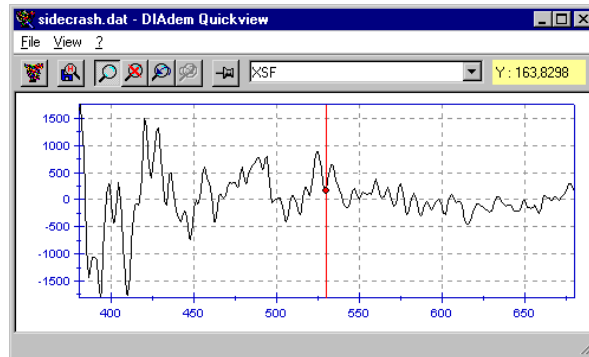
- ⇒ AVI-files
- ⇒ Data files (DIAdem format)
- ⇒ Graphics files
- ⇒ Online data
- ⇒ Model files
- ⇒ Info window

You can toggle between these pages by clicking the tabs at the lower edge of the data sources. The directory structure is then displayed as a tree. If the window is too narrow to display a tree, it can be widened towards the presentation area.

If more directories are to be added, click a free position in the window with the right mouse button to get a **new directory**. If a directory has to be **deleted**, use the "Delete" entry in the context menu.

The files can be previewed with a double click or a right click, combined with the selection of the **Quickview**, e.g. data preview.

QuickView



The AVI files tab



The page with the films shows all the directories defined by the customer for that page, with the AVI files.

The DIAdem files tab



The page with the available data files stored in the DIAdem data format shows all the directories defined by the customer for the page with the DIAdem files present in them. Every entry in a DIAdem data file can be opened out and then shows all the channels in the file.

The Picture files tab



Click the third tab to display graphics files, which can be incorporated in a layout.

The Online data tab



If this tab is selected, the signals that have been transferred online via OLE are displayed in the data sources.

The Model files tab



This tab selects a model file on which the measurement data is mapped graphically. Model files can be **vrml**, **dxf**, **mod** or **fem** in the file type.

The Info tab



By correlating an information node to a point, you can set up a connection to an HTML file. The HTML file assigned to the point must be located in the Insight sub-directory “..Info”.

The Info tab displays the contents of the HTML page when the mouse pointer lingers briefly on a point. DIAdem-INSIGHT uses a component of the Microsoft Internet Explorer for the display, so that all the capabilities of that browser, including spawning new browser pages are supported.

1.5 Model window

Three-dimensional models are displayed in the model window. These models can be imported in various formats from CAD and FEM systems as well as other general modeling systems.

The models that are read can consist of the elements points, edges and areas. In DIAdem-INSIGHT, it is possible to parameterize whether and how these elements should be depicted.

The **displacement** of model points proportional to measured values. The **color shading** of the model surface according to the measured values.

The display itself can also be rotated and zoomed with the mouse.

For a more detailed depiction, DIAdem-INSIGHT supports various lighting effects. The base illumination of the scene can be set, and the illumination can be arranged from up to 8 light sources.



If you call the *context menu in a model window* next to a model, the following buttons are displayed:



Depiction



Output to **clipboard**



Capture on/off



Basic **illumination** of the scene



Intensity of the **light** sources



When you click a *measurement point of the model* in the model window with the right mouse button, the context menu that is displayed is different to the one displayed if you click near the model.



The **display** influences the depiction of a model by defining different parameters.



Every model point is given a point number to which the window **Point Info** can be displayed.



Surface **color**



Delete selection



Delete result assignment: Canceling the assignment of the deformation or color shading to the individual measurement points



Marking the point group: the group the point belongs to is selected

1.6 Axis system

In the axis system in the report generation area, measured data is displayed as curves over time. Several data channels can be displayed in one axis system. Axis systems are created from the data sources with Drag&Drop and data channels can also be added. Data channels can be deleted with the appropriate icon in the legend.

If the axis system is synchronized with a video window, a **cross-hair cursor** can be moved along the measured points, while the related video pictures are shown.



The following functions are available in the *context menu of the axis system*.



Switch **zoom** mode on/off. When the zoom is switched off, the last enlargement is retained.



No zoom; i.e. the original scaling is restored.



Last zoom: Returns the graphic to the size of the last zoom.



Next zoom: Changes the graphic to the size of the next zoom.



Switches **legend** on and off



Scaling to extract/graph.



Output to **clipboard**

1.7 Video window

One or more video windows can be defined in the presentation area. Video sequences are played in them. They are operated using the **Player bar** or **synchronously** using an active axis system.

Just as various video sequences can be played simultaneously for comparison purposes, measured data can also be displayed synchronously with the related videos. The measured data is

displayed in the axis system as curves. In the synchronized video windows, the pictures are run at the same speed as the cursor is moved in the axis system.

To perform this kind of evaluation, the film has to be in digital form. Films that have been made conventionally, have to be digitalized and saved in the AVI format.



The following functions are available in the context menu of the video window.



Switch **zoom** mode on/off.



No zoom: Returns the graphic to the original size.



Last zoom: Returns the graphic to the size of the last zoom.



Next zoom: Changes the graphic to the size of the next zoom.



Output to **clipboard**



Calls the dialog for setting the **parameters of the synchronization** (see below)

2 Presentation



If a **scene** has been loaded it can be played from the player bar. The function icons are similar to those on a video recorder. Different views of the same data projection can thus be compared to each other.

If measurement data and the model have to be evaluated, synchronous projection via the crosshair cursor of the axis system is recommended. The axis system has to be the active window i.e. it has to have the yellow metronome icon.

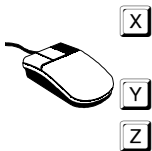
Open Layout...



If a **template** has been loaded via the File menu the windows have to be filled with data by drag&drop from the different data sources.

To **create a new layout or evaluation** the presentation area can be emptied first. Any new object is then dragged from the data sources and dropped onto the presentation area. There, each active element can be positioned and sized with the mouse and the model can be moved and zoomed, if necessary.


2.1 Moving, rotating and zooming a model and optimizing the viewing angle



To **move** a model in the model window, you need the **right mouse button** and the keys **X**, **Y** and **Z**. The directions these keys can move in depend on the current position of the axes in the coordinate system. Mouse movements may only be horizontal. If you move the mouse to the left or right, the model is moved according to the position of the coordinate system and the key that has been pressed.



Use the **left mouse button** to **rotate** a model. The **current position of the coordinate system** at the bottom right in the model window is decisive for the rotation. Click at any point in the model window, and hold the mouse button down. You now have the following options.

Drag the mouse to the left or  The model is rotated around the vertical axis.

Drag the mouse up or down ➡ *The model is rotated around the horizontal axis*

Drag the mouse diagonally ➡ *Combination of simultaneous rotations*

Zooming a model



To change the size of a model, you only need to click with the **right mouse button anywhere in the model** window and keep the mouse button held down. If you now pull the mouse to the right, the model is enlarged; if you pull it to the left, the model is reduced.

Release the mouse button when the model is the size you want.

Optimize the viewing angle on a measurement point

In DIAdem-INSIGHT, you can easily optimize the viewing angle on a measurement point. Double click the relevant measurement point. The model is then rotated in such a way that the clicked measurement point is located centrally in the model window and the sight of the viewer is aligned vertically on that point.

3 Working with DIAdem-INSIGHT

The core function of DIAdem-INSIGHT is the visualization of measured values on three-dimensional models. Principally, there are two forms of depiction available for visualization:

- (1) The color shading of the model surface according to the measured values and
- (2) the displacement of model points proportional to measured values.

For the displacement of model points, DIAdem-INSIGHT provides two different modes:

- (a) The deformation of the model is used, e.g. when the deflection of a component as a result of a stress is to be visualized (see Definition of a deformation).
- (b) The movement of the model parts: Parts of the model are moved relative to other parts, but every part, remains rigid or undeformed (see Defining a rigid body displacement).

Both forms of depiction, displacement and color shading, can be used simultaneously. If, for example, temperatures and elongations are measured on a component, the temperatures can be depicted as color-shading, and the measured elongation as deformation of the model.

3.1 Defining color shading

Follow the procedure described below to depict measured data as color-shading on a model:



*Open the depiction from the context-sensitive menu of the model and activate **Structure tab » Display of Points**.*



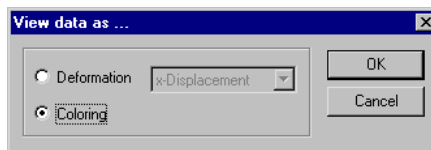
After Closing you will see big model points.



Now, switch the **data sources to the data files** (DIAdem format).

Drag the curve whose values are to be shown in the form of color shading, with the left mouse button held down, from the data sources **to one of the model points**. When you release the left mouse button on a point, the dialog *Display of the data* is displayed.

Select the option **Coloring**.

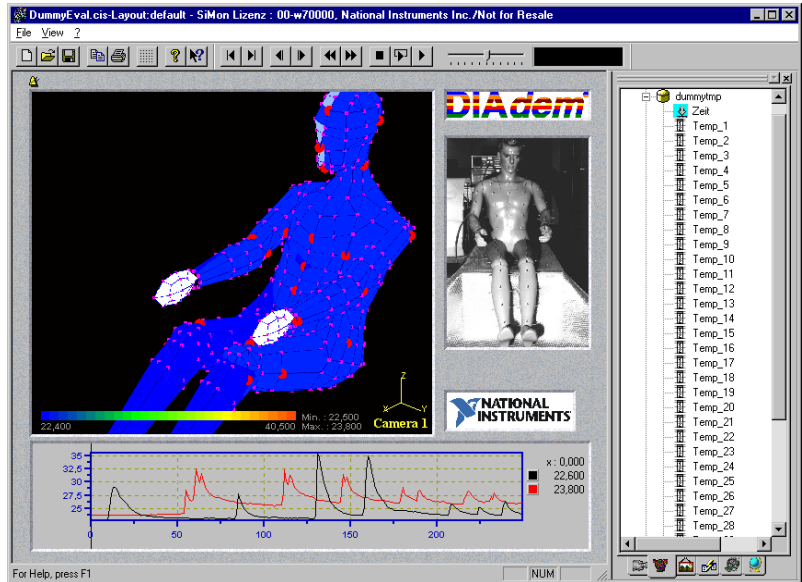


The assignment is made.

To depict the color shading, in the context-sensitive menu of the model, the depiction of the surfaces and their color shading have to be switched on (see above).

In this picture, the points which have been connected with data curves are displayed larger.

In this picture, the points which have been connected with data curves are displayed larger.



Important note: Please note that for the assignment of the data, the depiction of the deformation must be completely switched off.

3.2 Defining a deformation

Follow the procedure described below to depict measured data as a deformation on a model.



Open the depiction from the context-sensitive menu of the model and activate **Structure tab »Display of Points on the “**.



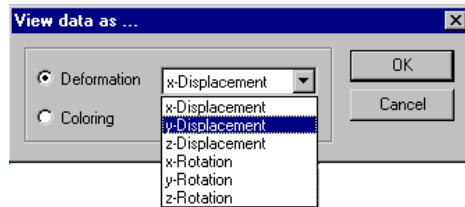
After Closing you will see big model points.



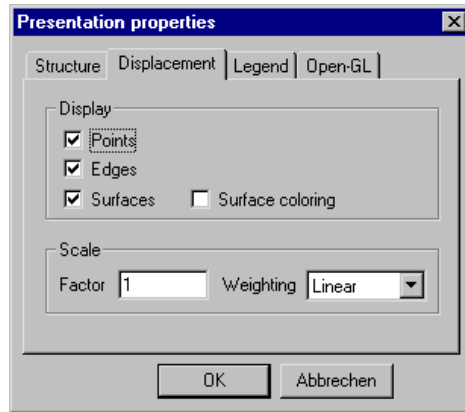
Now, switch the **data sources to the data files** (DIAdem format).

Keeping the mouse button pressed, **drag the curve** from the data sources **to one of the model points**. When you release the left mouse button on a point, the Display dialog appears.

Select the option **Deformation**. You can now select the three directions x, y and z, with positive or negative signs, for the displacement.



The assignment is complete. Now depict the deformation. In the context menu for the model on the Deformation tab, activate the depiction of the model points, edges and surfaces.



Important note: Please note that for the assignment of the data, the depiction of the deformation must be completely switched off.

3.3 Defining a rigid body displacement

To depict a rigid body displacement, the data is assigned in three steps:

- (1) Definition of a local coordinate system.
- (2) Assignment of points to the coordinate system.
- (3) Defining a deformation for the point at the origin of the coordinate system.

Important note: Please note that for the assignment of the data, the depiction of the deformation must be completely switched off.

Definition of a new local coordinate system:

There are one or more right-angled Cartesian coordinate systems with every model. The first coordinate system, also called the **main coordinate system**, always exists and cannot be changed. To start with, all the points of a model are defined in this coordinate system. Other coordinate systems, also called **local coordinate systems**, can be generated, parameterized and deleted by the customer.

A coordinate system is defined by **one** or **three** points. In the first case, the point defines the position of the origin of the coordinate system. The axes of the coordinate systems are always parallel to the axes of the main coordinate system.

In the second case, one point once again defines the position of the origin of the coordinate system. A second point defines a point on the X axis of the coordinate system and the third point, a point in the XY plane of the coordinate system. If these three points move, the coordinate system also moves. Depending on the movement below, the axes of the local coordinate system rotates with respect to the main coordinate system.

(a) Follow the procedure described below to define a **local coordinate system with one point**.



Open the depiction from the context-sensitive menu of the model and activate **Structure tab » Display of Points**.



Rotate and zoom the model in such a way that you can clearly see the point.

Now, click on the coordinate system at the bottom right edge of the model window. Drag it from there with the left mouse button held down towards the point that marks the origin. The cursor changes into a coordinate system. Move the mouse in such a way that the origin of this coordinate system is located exactly on that point.

Release the left mouse button. DIAdem-INSIGHT now shows you a new coordinate system at the desired position.

(b) Follow the procedure described below to define a **local coordinate system with three points**.



Open the depiction from the context-sensitive menu of the model and activate "Display of Points" on the tab "Structure".

Rotate and zoom the model in such a way that you can clearly see the point.

Now, click on the coordinate system at the bottom right edge of the model window. Drag it from there with the left mouse button held down towards the point that marks the origin. The cursor changes into a coordinate system. Move the mouse in such a way that the origin of this coordinate system is located exactly on that point.

Now, click the letter X at the end of the X-axis and drag the mouse with the mouse button held down to the point that should lie on the X-axis. The cursor then changes its shape and displays an X-axis with a marking at the position that should coincide with the point.

Release the mouse at the desired position. Nothing will happen initially!!!

In a similar manner, drag the end-point of the Y-axis with the mouse button held down to a point that should lie in the X-Y plane of the coordinate system and release the mouse at the desired position. DIAdem-INSIGHT can now display the coordinate system in the desired position.

Assignment of points to a new, local coordinate system

Follow the procedure described below to assign points to the local coordinate system:

Mark the points that you wish to assign to the local coordinate system. To do so, click an individual point, with the ALT-key held down at the same time, or with the CTRL-key held down, draw a rectangle over the corresponding point.

Click with the mouse on one of the points and drag the points to the origin of the local coordinate system. During this process, the cursor shape changes accordingly.

Release the mouse at the desired position. The points are now assigned to the local coordinate system.

Deleting a local coordinate system

Follow the procedure below to delete a local coordinate system:

*Click on the origin of the local coordinate system and drag the mouse with the left mouse button held down to a position at which there is **no** point. Now, DIAdem-INSIGHT will ask you whether you really want to delete the coordinate system.*

Confirm the procedure. The coordinate system is now deleted.

Note: If you have already assigned points to the coordinate system, they are transformed back into the global coordinate system before the local system is deleted.

3.4 The illumination of a scene

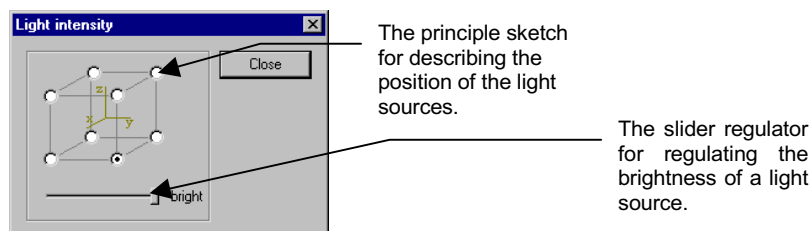
In DIAdem-INSIGHT, the appearance of the model surface is determined by two factors, i.e. by the color of the surface and the illumination of the scene. The overall illumination of a scene is obtained from the basic illumination of the scene and the light that is emitted from up to eight sources of light. Both are activated via the context menu.



The **basic illumination** of the scene defines a uniform, undirected light that provides uniform brightness all over. You can adjust the brightness of the scene between absolute darkness (left slider position) and maximum brightness (right slider position) with a slider regulator. All changes to the brightness are immediately displayed in the scene. The settings made in this dialog are also saved with the scene.



The position of the **light sources** is pre-defined by DIAdem-INSIGHT. The brightness of each individual light source can be changed by the customer in the dialog box.



By using the radio buttons of the principle sketch, the user can select the light source whose brightness is to be changed. By default, they are set to "Minimum", because of which no light-source icons are displayed initially in this display.

The brightness of the light sources can be changed by means of the brightness regulator. As soon as the brightness is greater than the minimum, a symbol for the light source is displayed in the scene at the selected position. All changes to the brightness of the light source are immediately displayed in the scene.



This dialog is a non-model dialog, i.e., Insight can also be operated while the dialog is displayed. This is particularly helpful because in this manner, a model can, for example, be rotated or zoomed while the light sources are adjusted.

3.5 Defining an information node

DIAdem-INSIGHT enables the customer to assign every point on a model to a separate information node, so that a link to an HTML file can be set up. To do so, the point only has to be assigned to the name of the HTML file and the HTML file must be located in the directory ..\Info.

If such a link has been set up, it is enough to move over a node with the mouse and linger there briefly. The HTML file is displayed on the Info-page of the data sources. DIAdem-INSIGHT uses a component of the Microsoft Internet Explorer for display, so that all the capabilities of that browser, are supported including the links to other pages. In particular, it should be pointed out that because of the script-support of the browser, it is possible to design pages in such a manner that the contents of databases can be read and displayed directly.

To define an information node, follow the procedure described below:

Click with the right mouse button on the point on the model.



From the context menu, select the option Point-Info. Now, in the dialog box displayed, enter the name of the file without its path and file name extensions.



*Activate the Info page of the data sources via the **Info** tab.*


Now, move the mouse over the node and check whether the file is displayed.






DIAdem-INSIGHT first checks whether the file exists at all and only tries to display it if it is present.

3.6 Marking points in a model

If points have been activated in the depiction of a model, they can be marked, i.e., they are given point designations in the form P_xxx, where xxx stands for the number of the point. To do this, follow the procedure below.

To **mark an individual point**, keep the  key pressed down and click the point with the left mouse button. The point designation is displayed next to the point.

To **mark several points simultaneously**, keep the  key pressed down and with the left mouse button down, draw a frame around the area whose points are to be marked. All the points that are located in this area will now get point designations.

To **remove the marking** of an individual point or several points, follow the same procedure as for marking. Hold the  key down for an individual point, and the  key for several points.

3.7 the model window coordinate system



If you click on the small X,Y,Z coordinate system (“camera”) in the lower right area of the model window with the right mouse button, a context menu with different buttons is displayed. These buttons provide the various **standard perspectives of a model**, between which DIAdem-INSIGHT switches in such a manner that the observer can easily detect the change in perspective.



This icon saves the last **perspective** that has been freely set by the user. E.g. if you select the XY-view after setting a „tilted“ perspective, a click on this button will again give you the „tilted“ view.



XY-plane:

Basic viewing angle that only displays the X and Y-alignment of the model. The Z-alignment is not visible.



XZ-plane:

Basic viewing angle that only displays the X and Z-alignment of the model. The Y-alignment is not visible.



YZ-plane:

Basic viewing angle that only displays the Y and Z-alignment of the model window. The X-alignment is not visible.



Next camera



Previous camera

By default DIAdem-INSIGHT saves 5 different viewing angles and zoom levels. All changes to viewing angles and zoom levels are held for the currently active camera. They can be called with these last two icons.

When you activate one of the two buttons, the number of the current camera is displayed on the coordinate system.

4 Inserting Synchronized Videos

DIAdem-INSIGHT offers the additional function of playing films and measured curves synchronously. For screen evaluation, the pictures in the film are synchronized with the related measured values. If two films are compared to each other, they have to be synchronized as well.

Videos

For films, this time information can be obtained from the frame rate (no. of pictures/seconds) and the starting time of the recording. From these two values, DIAdem-INSIGHT can determine a related time value for every video picture.

The synchronization parameters are opened via the context menu of a video window (see below).

Video and curves

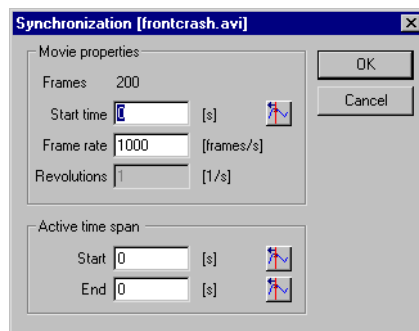
For the curves, there is a time value for every point on the curve and this corresponds to the X value on the curve.


The synchronization parameters are opened via the context menu of a video window (see below).

Synchronization parameters





The synchronization parameters are called via the context menu of the video window.



Start time	Playing time for the picture in the reference picture.  When this button is pressed, the time value of the current picture is accepted.
Frame rate	This specifies the recording speed [pictures/seconds].
Revolutions	Determining the rotation angle

Apart from the film parameters, an **active area** can also be defined. The active area means the measurement range in the axis system that the particular video sequence corresponds to. It may include the entire X axis. If it only includes a section, the beginning and the end have to be defined.

Begin	The first picture belongs to this value.  Press the button to take over the current time value the cursor in the active window is located at.
End	The last picture belongs to this value.  Press this button to take over the current time value the cursor of the activated window is currently located at.

Active window



DIAdem-INSIGHT manages a central time value to which all films and curves are synchronized. This time value is displayed in the player bar. The central time value is defined by the window (video or curve) to which the yellow metronome symbol is assigned. This "Master window", which is also called the "Active window", provides the time value to which all the other windows are oriented.

The other windows are orientated as synchronously as possible to this time value.

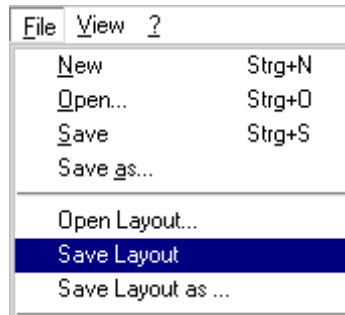
Example: The windows are controlled by moving the cursor in the axis system. The graphs in this window were acquired with 10 kHz. The video window contains a video that was recorded at 1000 pictures per second (1 kHz). If the metronome is now assigned to the axis system, DIAdem-INSIGHT automatically searches for the video picture that comes closest to the time axis of the axis system. The varying acquisition rates mean that one picture is assigned to 10 measured points.

5 Saving Presentation and Creating Templates

The complete file can be saved as a presentation. A presentation includes the layout and the links to the different data sources (data, video, bitmap).

Layouts can be created for repeated evaluations made for similar tests, and used as templates. A layout includes everything that has been defined in the report generation area: video windows and axis systems. The current values can be dragged from the data sources and dropped into the axis system or the video window, thus reducing the preparations to a minimum.

A document template can be stored as a new template / layout at any time.



5.1 Presentation mode

Elements such as the data sources, menu bar and tool bar are required when working with DIAdem-INSIGHT. If the results are to be presented, these tools can be cut. There are 2 different switches for activating the presentation mode:



The report generation area takes up the entire screen ...



... and the screen is maximized.



323083A-01

Sept01