

DIAdem® - the PC Workshop

Quick Start and User's Guide

An abbreviated manual for rapid familiarization with the free **DIAdem-VIEW** device.
More detailed information is available in the DIAdem User's Manual that is distributed
with Licensed-Versions of DIAdem.



the smart approach to instrumentation™

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DIAdem®

the PC Workshop

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Preface

Devices and Interfaces of DIAdem® - the PC Workshop

DIAdem®, the PC workshop provides solutions for your technical tasks. It is made up of seven components called devices.



DIAdem® -DATA

DIAdem® DATA manages data sets. Data can be processed individually, in blocks or in channels. Data is displayed for overview in data channels; the corresponding data properties are displayed in sorted table format.



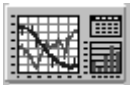
DIAdem® -VIEW

With DIAdem® VIEW you can view data or “look at it under the magnifying glass.” The Working area is divided into several axis systems to facilitate viewing. Curve sections can be deleted and recalculated.



DIAdem® -CALC

DIAdem® CALC lets you evaluate data mathematically. Each mathematical operation can be performed with custom parameters or configured with permanent default settings. Individual calculations are documented in the background in the form of a script.



DIAdem® -GRAPH

With DIAdem® GRAPH you can document data in presentation format. Represent your information using graphs, bars, or tables. You can also embed in background graphics.



DIAdem® -DAC

With DIAdem® DAC (Data Acquisition and Control) you can process data online. Measurement and control tasks are described graphically and are divided into four separate layers: the data layer, the Packet Processing layer, the control layer and the system layer.



DIAdem® -VISUAL

With DIAdem® VISUAL your terminal becomes a real-time display instrument. The wide range of indicator and input instruments and the capability of linking in images and image sequences allow you to simulate any number of measurement instruments and situations (real world instrumentation).



DIAdem® -AUTO

DIAdem® AUTO allows you to automate procedures as Autosequences. Procedures can be recorded interactively and then run off any number of times, with results that can be accessed by all the DIAdem® devices. DIAdem® user dialogs enable you to intervene interactively while the Autosequence is running.



DIAdem® Interfaces

DIAdem® has various interfaces for linking external applications: data is exchanged with other Windows applications via DDE and OLE and with databases via ODBC/SQL. External hardware drivers (OPC server) can be accessed via OPC. Via the TCP/IP interface, (measured) data can be exchanged online between DIAdem®-PCs within a network. The DLL interface GPI in DIAdem® can be used to integrate measurement hardware, data file drivers, commands and variables.

DIAdem Quick Start



Reference Note:

DIAdem's **Help Menu**, represented by a question mark (?) in the tool bar contains a great deal of helpful information, including examples and user tips pertaining to all of the DIAdem software features and options.

Installing DIAdem

Minimum System Requirements

- IBM compatible computer 80386, with coprocessor
- Minimum 66 MHz
- At least 8 MB RAM (16 MB RAM or more recommended)
- At least 20 MB of available disk space
- Microsoft Windows (version 3.1, Windows95/98, or WindowsNT)
- Minimum monitor resolution: 800 x 600 pixels

Installation Steps

Note: More than likely you installed DIAdem during the installation of the primary Data Acquisition Software for your device. If you already installed DIAdem, please ignore the following steps.

1. Install Software.

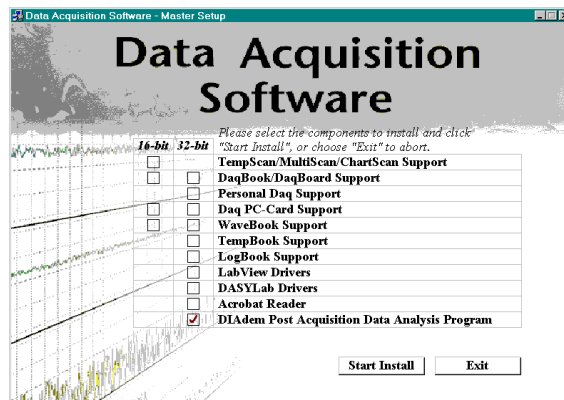
- (a) Insert the install CD-ROM and wait for your PC to auto-access the CD.
- (b) When the *Data Acquisition Software – Master Setup* screen appears, check:

“DIAdem Post Acquisition Data Analysis Program.”

- (c) Click **Start Install**.

2. Choose a DIAdem Installation Type.

You will be prompted to choose a DIAdem installation type.



Note: Select one of these two options unless you purchased a licensed version of DIAdem.

- DIAdem Shell + View for IOtech Customers** – Installs a free version with DIAdem Shell and DIAdem View. This version is provided free to users of IOtech hardware.
- DIAdem 30 Day Trial** – Select this installation type if you did not purchase a licensed version of DIAdem, but would like to try out DIAdem's expanded features.

Select one of the above options unless you purchased a DIAdem licensed version. **Do not confuse the “Standard” Licensed version (below) with the DIAdem Shell + View for IOtech Customers version, as these are completely different installs. To install any of the following three “Licensed” versions you must have a license disk and password.** The DIAdem program will inform you when to insert a License Disk, password, and user name.

- DIAdem Licensed Version (Customized)** – Allows you to specify the installed software components for licensed DIAdem.
- DIAdem Licensed Version (Minimized)** – Installs only the program files for Licensed DIAdem. There are no “quick view” or “help files” installed.
- DIAdem Licensed Version (Standard)** – Installs program, “quick view,” and documentation files for a DIAdem licensed version.



If you purchased a *licensed version* of DIAdem, a *license disk* and password were included in your order. The DIAdem install program will inform you when to insert the License Disk and when to enter your license password and user name.

3. Click **<Next>** (after making your selection from step 2).

4. Select Options and Click <Finish>.

Just before the setup is complete, you will see the following two option check boxes.

Display the latest information now –

This box is checked by default. Leaving the boxed checked brings up the readme file contents listed below. We recommend that you leave this box checked.

Start the program now –

Launches the DIAdem program for immediate use.

After selecting one, both, or neither option, click <Finish> to complete the setup.

Readme File Contents

Readme file contents are subject to change. File categories are typically as follows:

- Getting Started
- Updates to the Current Version
- Additional Information
- Conditions for Use

Launching DIAdem from an Acquisition Program



The steps in this section do not apply to ChartView.

The following steps can be used with data acquisition programs that contain a file converter capable of converting raw binary data to the DIAdem data format. ChartView User's should skip to the following section, *Using DIAdem with ChartView*.



Reference Note:

The following steps apply to DaqView, Personal DaqView, LogView, and WaveView. The steps are discussed in general terms since the data acquisition programs differ in regard to toolbars, pull-down menus, and other aspects of GUI layout. Refer to your specific application's documentation as needed.

1. Include the DIAdem File Format as a Data Conversion Preference

Verify DIAdem is selected as a file format. This is accomplished through your application's "Conversion Preferences."

Refer to your application's user documentation as needed.

Note: DIAdem is initially selected by default.

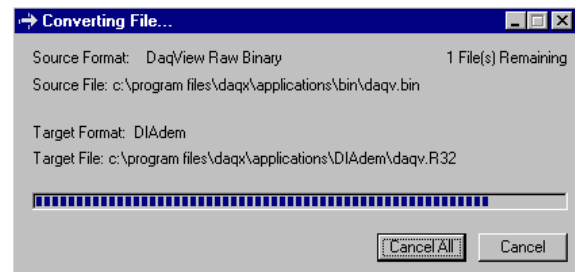
File Format	Data File Ext.	Header File ...	Subdirectory
DIAdem	R32	DAT	\DIAdem
ASCII Text (Spreadsheet)	TXT	TX\$	\ASCII
DADISP	DAT	HED	\DADISP

Selecting DIAdem as a File Format

2. Acquire Data to Disk and Convert File

When acquiring data to disk, your application's file converter automatically converts the Raw Binary data to the DIAdem Target Format (verified in the previous step).

During the conversion, a "Converting File" box shows: an animated completion bar, format of the source and target files, and file paths of the source and target. The box is usually on screen for only a moment; however, we can obtain the information from your application's **Data Destination** region, as mentioned in the following tip.

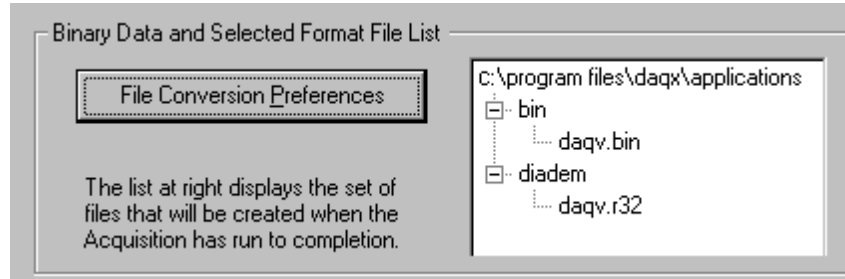


File Conversion in Progress



After the data conversion completes, check the **Data Destination** area of your application. Certain applications, such as DaqView, make use of a Data Destination tab. Other applications (such as WaveView), show data destination after a “Direct to Disk” [or equivalent] button is pressed. Consult your application’s user documentation as needed.

It is a good idea to write down the complete file path for the newly created DIAdem® data. This allows you to access the file later from DIAdem’s **Load Data** box, as discussed on page 8.



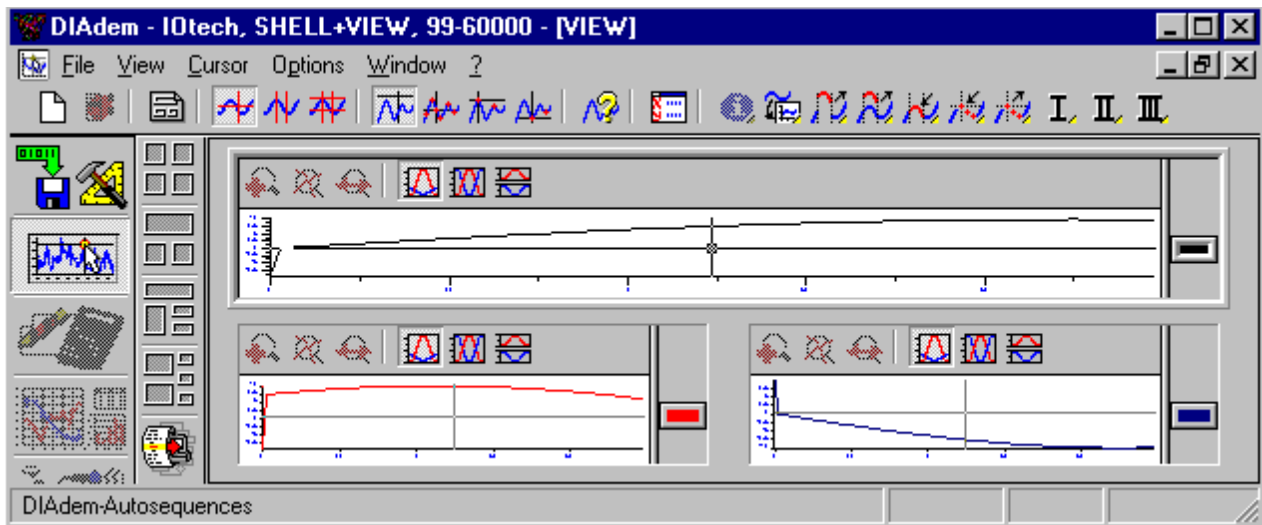
Checking Data Destination

In this example, the DIAdem® target file is located at `c:\program files\daqx\applications\diadem\daqv.r32`

3. View Data



From your data acquisition program’s main window, click the **View Data** button. This launches the DIAdem® program. DIAdem’s main window will appear with waveforms from the most recently acquired file.



DIAdem’s Main Window, Showing Graphs for Three Channels



We recommend that you review sections 1, 2, and 3 of this document, as well as DIAdem’s help files. The section entitled, “**Where to go from here....**” on page 10 includes instruction on accessing the help files and identifies the various help topics.

Using DIAdem with ChartView

This method must be used for data acquisition programs that have no integrated converter capable of converting raw binary data to the DIAdem data format.

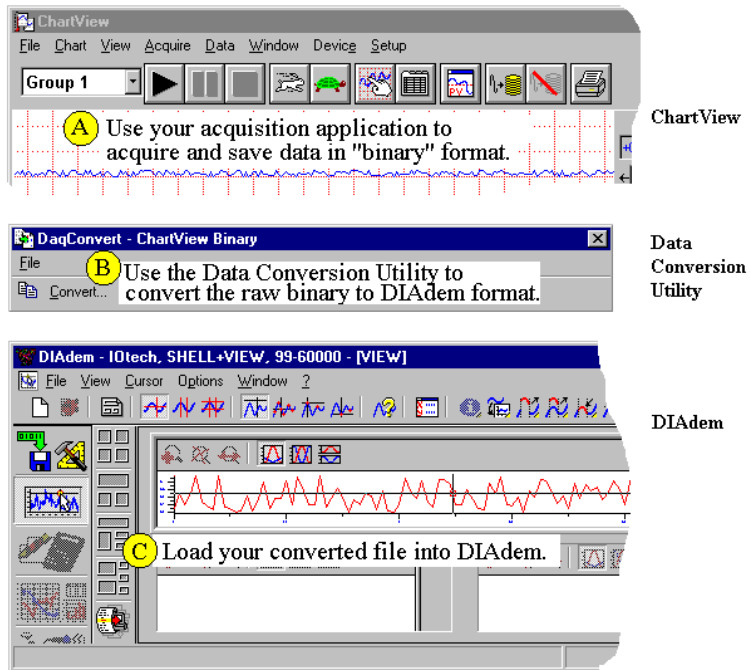
ChartView has no direct support for DIAdem. In this case a stand-alone file converter is used to convert binary data to the DIAdem format.

Note: The Data Conversion Utility (file converter) is installed automatically when you install ChartView from CD-ROM release version 1.9 or greater.


The following steps show how to convert a binary file from a data acquisition program to DIAdem format, then load the converted file into DIAdem.

A simplified view of the procedure is at right.

- (A) Use ChartView to acquire and save data in binary [raw binary] format.
- (B) Use the Data Conversion Utility to convert the raw binary format into the DIAdem format.
- (C) Load the converted file into DIAdem.

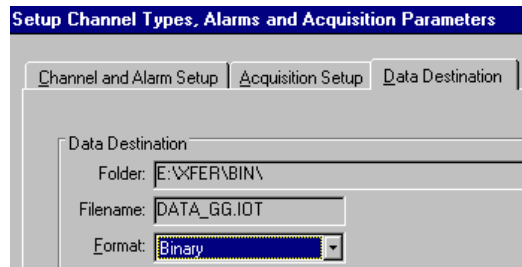


ChartView, Data Conversion Utility, and DIAdem on a Desktop Concurrently

 During a session in which several acquisitions are to be followed by viewing each file in DIAdem, it is recommended that: the data acquisition application, the file converter, and DIAdem remain on the desktop concurrently.

(A) Acquire and Save Data in Binary Format

1. **Open ChartView.**
Consult the ChartScan Users Manual as needed.
2. **Select Binary Data Format.**
This is done in ChartView's **Data Destination** section (see figure).
3. **Acquire and Save Data.**
In the example at the right we are saving a binary data file named **DATA_GG.IOT** to folder **E:\XFER\BIN**



Select Binary Format

(B) Convert Binary Data to DIAdem Format

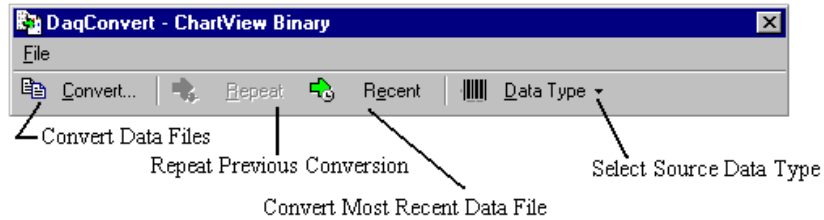
1. **Open the Data Conversion Utility.**
Use a shortcut icon, or navigate from your desktop's **Start Menu** as follows and double-click on the *Data Conversion Utility* item:

Start ⇒ **Programs** ⇒ **ChartView** ⇒ **Applications** ⇒ **Data Conversion Utility**

The conversion utility appears similar to that shown in the following figure.



Shortcut to the Data Conversion Utility

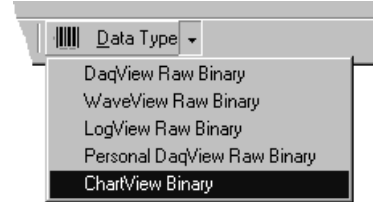


Data Conversion Utility (appearance shown is for ChartView)

2. **Select "ChartView Binary" as the Data Type.**

The first time you run the data converter, a dialog box prompts you to select a data type. The data type designation is based on the program that was used to collect the data, e.g., *ChartView*.

If the prompting dialog box does not appear, use the **Select Source Data Type Tool** to select **ChartView Binary** (as shown in the figure at the right).



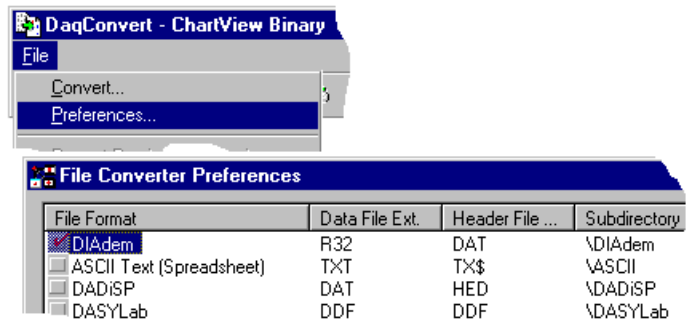
Selecting a Data Type



If this is the first time you are using the data converter you can skip to step 4 since the DIAdem format is initially selected by default.

3. **Select the DIAdem File Format.**

This can be done as follows by dropping down the data converter's File menu and clicking "**Preferences.**" This opens a dialog box displaying a list of formats into which your data can be converted.



Selecting the DIAdem File Format

If there is not a check mark next to the DIAdem item, click on it once to check it.

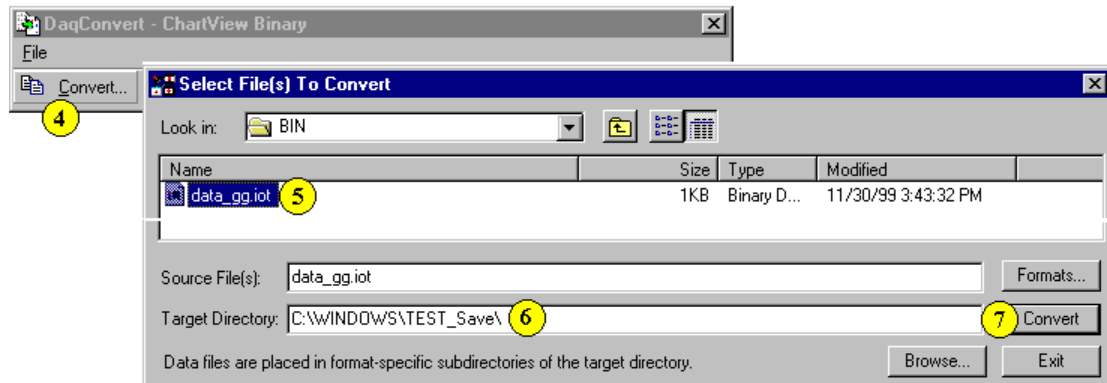
Note: You can select additional file formats for other application uses; but for our Quick Start purposes we only need to select the DIAdem format.

4. **Click the Convert Button** [on the data converter's tool bar].

A dialog box will appear that is similar to the **Open File** dialog used by many programs (see following figure). Note that this directory differs for each of the View programs.

If this is the first time that you are converting files of this type, you will have to navigate to the directory containing your data. For example, to get to **data_gg.iot** (as shown in the following figure), we navigated as follows:

E:\XFER\BIN\DATA_GG.IOT Note that this is the path that was identified earlier in our example application's Data Destination for the binary file (on [page 4](#)).



Converting a ChartView Binary File to a DIAdem Format File

5. **Select the Files as you want to Convert.**
 In the example we only have one file available (`data_gg.iot`).

6. **Enter the Target Directory Path.**
 In the **Target Directory** textbox, type the path of the directory that you want to use as the parent directory of the converted data. Note that you can press the **Browse** button to navigate to the target directory instead of typing it.
 In the example above we used: `C:\WINDOWS\TEST_Save\`

The converted data files will be placed in a sub-directory named "DIAdem". Thus the complete path for our saved data is: `C:\WINDOWS\TEST_Save\DIAdem\data_gg.DAT`

7. **Press the Convert Button** (in the Select Files to Convert box).
 This action starts the file conversion and displays a progress meter.

After the *DIAdem* format file has been created, we can load our acquired data into *DIAdem* as discussed in the following section.

(C) Load the Converted File into DIAdem (these steps are not exclusive to ChartView and can be applied to other acquisition programs)

If you do not already have *DIAdem* open, launch the program from a desktop shortcut (if applicable), or by navigating from the PC desktop as follows:

Start ⇒ Programs ⇒ DIAdem ⇒ DIAdem

1. Click the **DIAdem-DATA: Data Management** button.
2. Click **Load Data**. A Load Data box appears.
3. Using the *Load Data* window, locate your *DIAdem* target file and highlight its name.
 In the example we have highlighted `daqv.DAT`.

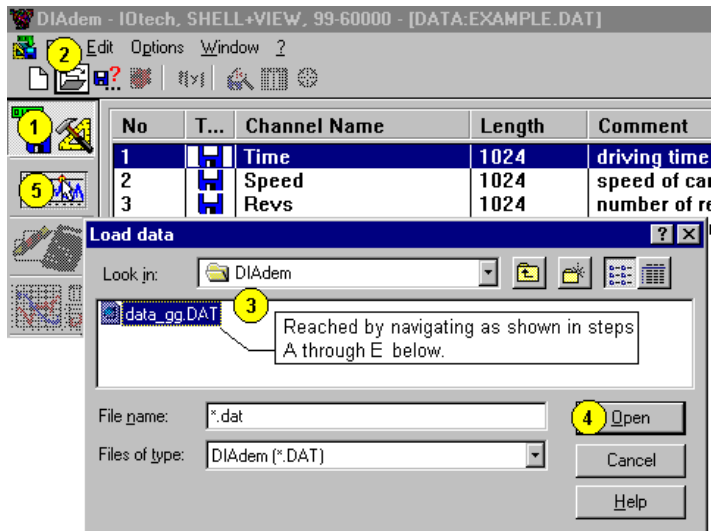
Note: We reached this target file by navigating as shown in steps A through E (below).

We used the **Target Directory** path we created earlier `C:\WINDOWS\TEST_Save\`

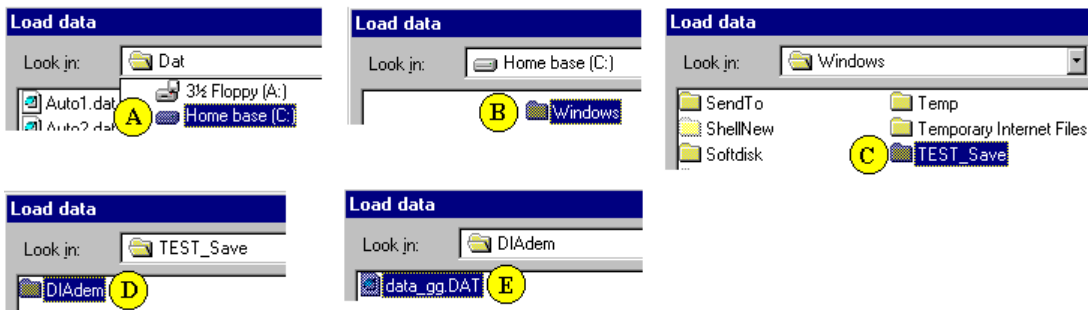
The complete path for our saved data was `C:\WINDOWS\TEST_Save\DIAdem\data_gg.DAT`

Note: *DIAdem* data files always have a "DAT" file extension. The file name itself will match the name of the raw binary file you converted.

If you need help finding a target directory path, see the related tip on [page 3](#); or consult your application's users manual, if needed.

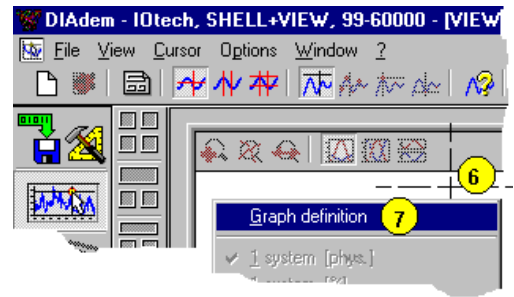


Loading Converted ChartView Data into DIAdem

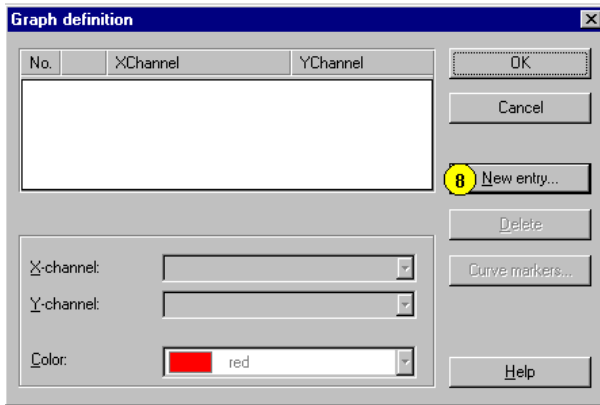


Navigating via DIAdem's Load Data Box to Locate the Target File

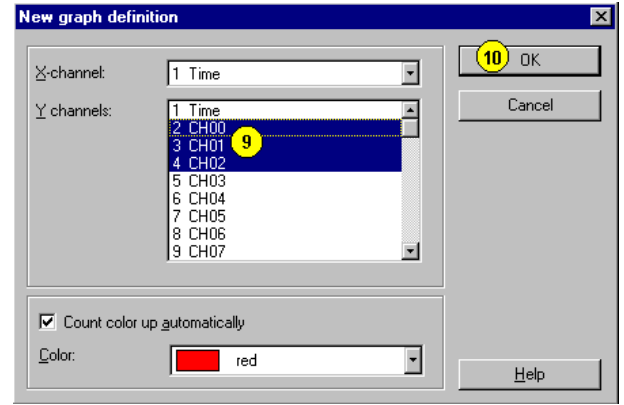
4. Click **Open**.
5. Click the **DIAdem-VIEW: Data Viewing** button.
6. Right-click in the empty graph region of a chart. A specific location is not required.
7. Click on the **Graph Definition** item listed at top of the pop-up box. A *Graph Definition* box appears, as shown in the following figure.



8. Click **New Entry**. A *New Graph Definition* box appears.



Selecting "New Entry"



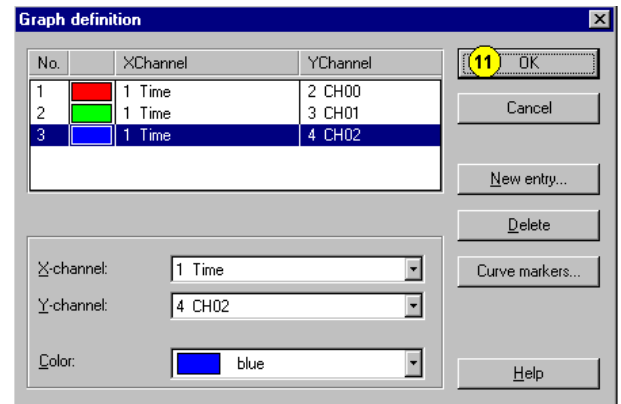
Selecting Three Channels for Viewing

9. Select three channels. Do this by holding down your keyboard's **CTRL** key, then selecting three channels with the mouse. In our example we have selected Channels 0, 1, and 2 (CH00, CH01, CH02).
10. Click **OK**. A *Graph Definition* box appears with information regarding the three graphs. For each graph (1, 2, and 3) the X-axis and Y-axis are identified and a graph color is indicated as shown in the following figure.

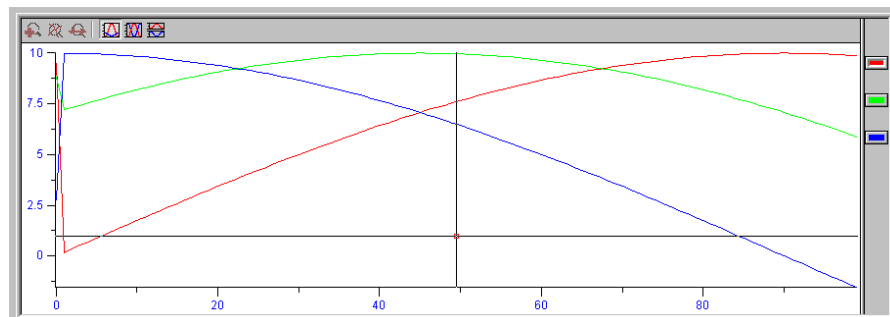
In the *Graph Definitions* example to the right, we see that the X-axis represents time and the Y-axis represents channel values.

11. Click **OK**.

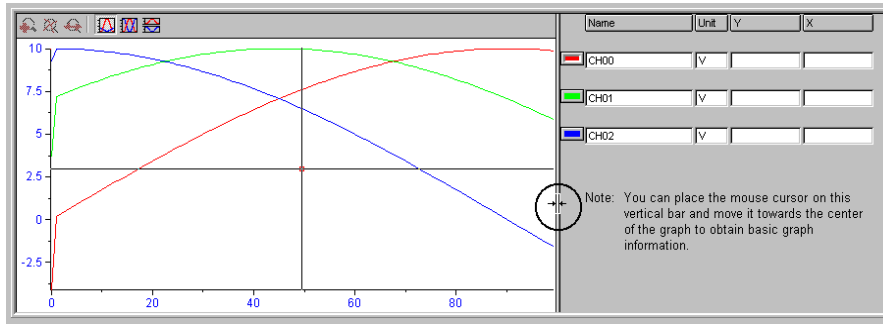
The three graphs can now be viewed as indicated in the following two figures.



Graph Definition for 3 Channels



Viewing Three Graphs of Channel Values over Time



Viewing Three Graphs and Basic Graph Information

Where to go from here ...

At this point you should have just completed viewing data in DIAdem. What's next?

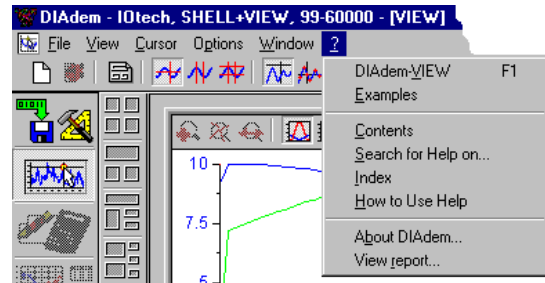
We recommend that you experiment with the program to get a better feel for its many features and capabilities. You should review the available documentation, including the DIAdem Help files. Several help topics are identified in the remaining figures.



Reference Notes:

(1) Refer to the sections 1, 2, and 3 of this document for more detailed information regarding DIAdem.

(2) DIAdem's **Help Menu**, represented by a question mark (?) in the tool bar contains a great deal of helpful information, including examples and user tips.



Accessing DIAdem's Help Files

DIAdem-VIEW Help Files

Selecting **DIAdem-VIEW** from the **Help pull-down menu** provides quick access to the following help topics. You can also use your keyboard's **F1** key for immediate access to the topics identified below.

Introduction to DIAdem-VIEW

[Working with DIAdem VIEW](#)

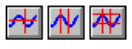
Function groups of DIAdem-VIEW



[Loading a new screen partitioning](#)



Deleting all graph definitions



[Crosshair, Band, Frame cursor](#)



[Free, Graph, Maxima, Minima cursor](#)

Features and tasks of DIAdem-VIEW



[Adding a new graph in an axis system](#)



[Displaying/suppressing the display of coordinates](#)



[Copying, moving and deleting graphs](#)

[Working with DIAdem-CALC](#)



Enlarging graph segments

[Legend display / Display of graph coordinates](#)

[Legend display / Display of graph coordinates](#)



[Icon which can be assigned to any autosequence](#)

The first 6 symbols are pre-set by default. Information on the assigned autosequences can be obtained from



[End interaction](#)

Other tasks and features (only accessible from the menu bar)

Cursor ...

[Set the guide graph](#)

Defining the graph to which the graphics refers

Settings ...

[General](#)

Data format, brief help, channel properties

[Parameter file](#)

Parameter file for default settings of the DIAdem actions

[Memory organization](#)

Size and organization of the data storage area

[Report](#)

Confirm report file

See also:

[DIAdem Cursor Types](#)

“Examples” Help Files

Selecting **Examples** from the Help pull-down menu provides quick access to the following help topics.

Examples and Demos ...

 [How to use DIAdem](#)

 [Applications](#)

 [Templates](#)



How to use DIAdem

  [Loading, processing and calculating data](#)

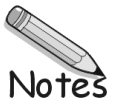
  [Viewing Data](#)

  [Data Calculation](#)

  [Create Presentation Graphics](#)

  [Creating Block Diagrams, Measurement and Visualization](#)

  [Creating Autosequences and Starting](#)



DIAdem - the PC Workshop

DIAdem® has been designed as a PC workshop for solving technical tasks. The underlying principle is a logical arrangement that gives you an overview of all program elements. Individually encapsulated devices ensure an orderly division of tasks. Similar functions are grouped together and parameters in dialog boxes are hierarchically ordered according to their importance.

Three guidelines determine the nature of DIAdem® from the most basic layer up: *functionality*, *clear layout* and an *intuitive interface*.

Functionality means that DIAdem® allows you to manage, analyze and document your data with consistent operating logic. All similar functions have been grouped together into complete units, the DIAdem® devices. All mathematical analysis functions are found in the optional DIAdem® CALC device, all functions for creating graphic documents in the optional DIAdem® GRAPH device, etc.

This brings us to the second concept, DIAdem®'s **clear layout**. As a rule, only the device that is currently being used is visible. The others remain in the background. The surface layer of a device is designed so that only the functions required for the task at hand are visible.



Symbolic interface

The third concept, **intuitive interface**, makes it easy for you to use DIAdem®'s full range of features. All features can be activated by graphic symbols (icons). You can also make changes to an axis system directly on-screen with the mouse. And context menus accessed by clicking the right mouse button bring up context-specific menus, making it easy to set parameters for an object.

This document is an abbreviated manual designed for rapid familiarization with the free DIAdem-VIEW device. More detailed information is available in the DIAdem User's Manual that is distributed with Licensed-Versions of DIAdem.

Note that all available DIAdem® functions are explained in the program's online help.

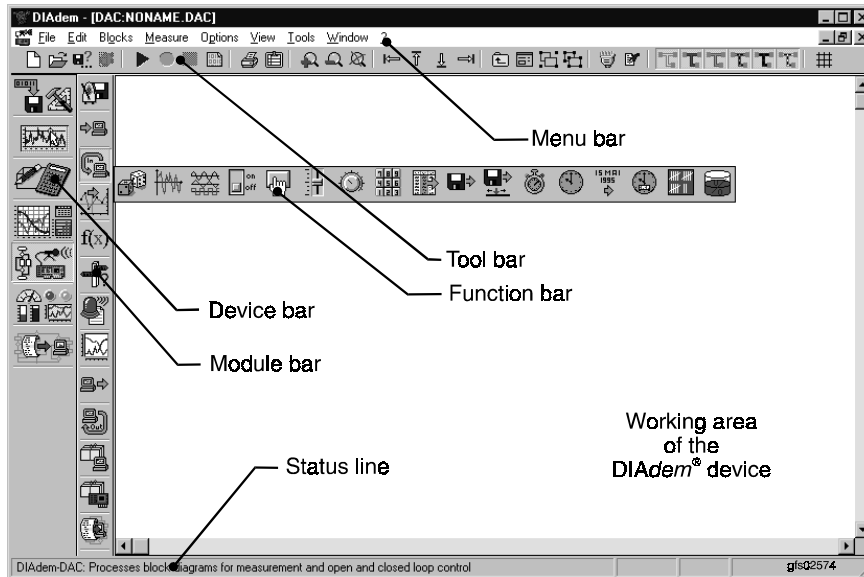
Throughout the manual, you will see sample tasks you can execute with DIAdem®. The steps demonstrate typical examples of the kind of work you can perform with each device.

Sections you can perform on your own computer are printed in italics.

The Overall Design

The structure of the screen is based on a consistent operating logic. In the following figure you will notice that the Device and Module Bars (used to access functions) are arranged vertically, whereas the operating elements of the Function Bar are arranged horizontally. Common operating elements are always visible.

The following screen view and detailed description [of the individual structural and interface elements] illustrate the design of a DIAdem® PC workshop. The description begins at the left edge of the screen with the Device bar, moves right to the Module bar, then to the Function bar and up to the Tool bar and Menu bar.



The DIAdem® devices are lined up one under the other on the left side of the screen, where they are always accessible. Each of the individual DIAdem® application windows is known as a device. They represent the topmost layer in the arrangement of PC workshop. The **Device bar** is always visible, making it easy to move from one device to another.

When you choose a device by clicking on it with the mouse, the corresponding **Module bar** appears for most devices. On this second layer, functions and actions are grouped thematically.

After you click on a button on the Module bar, the corresponding **Function bar** opens up horizontally. You can perform functions such as choosing an axis system and tables in the optional DIAdem® GRAPH device or choosing mathematical functions in the optional DIAdem® CALC device. Functions are processed in the **Working area** of each device.

Note: When symbols appear *grayed-out* in the Function bar, Module bar, or Device bar, the corresponding function, option or device is not part of the current installation. Devices and options can be included at any time.

The horizontal **Tool bar** is located above the Working area. It contains all the features and commands you will need to use DIAdem® in the Working area.

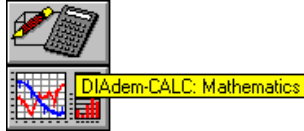
You can also access all the features, functions and commands of the currently active device in the corresponding menus through the **Menu bar** with the keyboard.

You should also be familiar with the **Status line**. In addition to general messages, brief help messages appear here describing each symbol or function. For example if you are working with an axis system in the optional DIAdem® GRAPH device, you can tell [from the Status line] which item is used to move an object.

Context Menus and Tool Tips

Two important elements do not appear in the screen above, since they are not normally visible: context menus (sometimes called shortcut menus) and tool tips.

Context menus provide rapid access to the most important features. You can access them by clicking on the right mouse button from many places in the program. For example one context menu offers features used in working with the active axis system in the optional DIAdem[®] GRAPH device.



Tool tips

Tool tips are text fields used to identify symbols. A tool tip appears whenever the mouse pointer momentarily rests on the corresponding symbol.

You can use Tool tips to familiarize yourself with the individual devices. To activate a tool tip, slowly move the mouse pointer over the Device bar without pressing a mouse key.

The DIAdem Devices



Part of the DIAdem[®] Device Bar

The DIAdem[®] devices could be thought of as a set of work tools. Each tool is intended for a specific purpose. Note that devices can be easily distinguished by their graphic images (icons).

The element common to each of these devices is the data, which is processed in different manners by different devices. In our analogy, the data is then the work object on which the tools are used. Data must first be available to be processed by the devices.

There are two types of devices:

- devices that can create data, for example, the optional DATA and optional CALC devices
- devices that merely display data, such as the VIEW device and the optional GRAPH device.

The optional Autosequences represent a special case, as they can use features from all the devices, in order to automate work sequences.



Mouse pointer

To select a device, simply click on the corresponding symbol in the Device bar with the left mouse button. For example to choose the optional DIAdem[®] GRAPH device, if applicable.

Note:

Whenever you are told in this manual to activate, click on or execute a feature, device or object, it means you should click on the appropriate symbol or object with the *left* mouse button. Similarly, “double-clicking” and “pressing a button” refer to the *left* mouse button.

The Module Bar



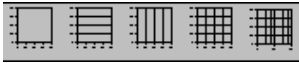
DIAdem[®] GRAPH
Module Bar

When you select a device, the Module bar, another vertical bar, appears to the right of the DIAdem[®] Device bar. Similar features and functions are arranged together in groups on this bar.

For the optional DIAdem[®] GRAPH device, this means that the symbols for individual graphic modules are found here: axis system, tables, and background images to name a few.

For the optional DIAdem[®] CALC device, the mathematical formulas are grouped together on the module bar: basic math functions and features for signal analysis and statistics.

Functions



Part of Function bar for 2D axis systems in DIAdem® GRAPH

When a group symbol is activated, the corresponding Function bar opens up horizontally. Executable functions are for example choosing an axis system and tables in the optional DIAdem® GRAPH device, or choosing mathematical functions in the optional DIAdem® CALC device.

If you have the optional DIAdem® GRAPH device, choose one of the various 2D axis systems in by clicking on the corresponding symbol in the Function bar.

The selected axis system is indicated in the upper left-hand corner of the Working area. The function bar is the same in all the DIAdem® devices. Autosequences that are used frequently can be assigned to these symbols and are thus available in all the devices.

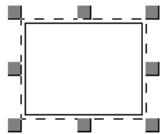
The Working Area

When you select a device the Working area is automatically filled with a pattern. The same procedure is always used for working with objects: a left-button mouse click is used to activate, left double-click to set parameters and right mouse click to open context menus.



Mouse pointer

If you have the optional DIAdem® GRAPH device, click on one of the 2D axis systems.



Marking a frame around an object

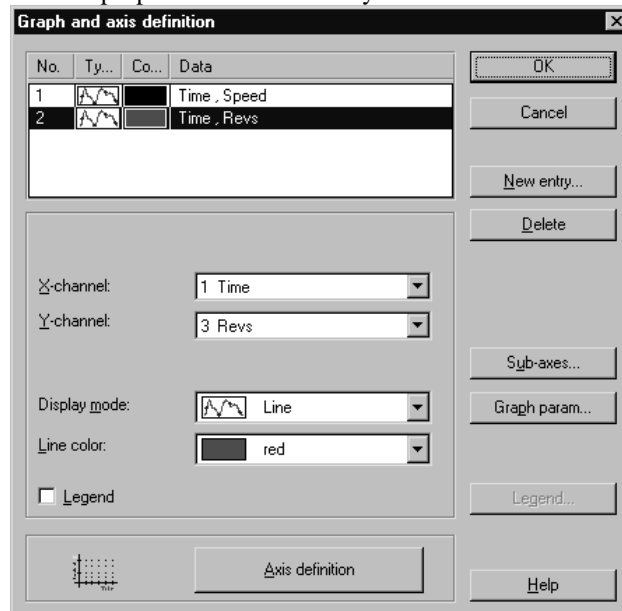
You will notice light gray marking at the corners and at the middle of each side of the active axis system. If you click inside the markings again and hold the left mouse button down, you can move the axis system.

When you “pull” on one of the marks, the axis system increase in size correspondingly. You can pull by clicking with the mouse and holding the left button down while you move the mouse. If you pull the marks on the sides, the axis system will increase in size horizontally or vertically. If you pull on a corner mark, you will zoom the entire axis system.

Dialog Boxes

All settings for objects are handled in dialog boxes.

Generally dialog boxes are used to associate data with objects such as axis systems or tables, or to set properties such as line style and color.



To access graph and axis definitions in DIAdem®-GRAPH, **double-click** on the axis system in which you wish to represent the data.

New entry...

Entering a new graph

To enter a graph, use the New entry button. At this point it will be sufficient to specify from the list of available data channels an X channel to represent data values on the X axis and a Y channel to represent corresponding values on the Y axis. Exit the sub-dialog box and the main dialog box with the OK button.

Note: In the “graph entries heading” of above mentioned dialog box , the word “Color” is not complete [it appears as “Co...”]. As soon as the mouse cursor crosses the vertical line separating the columns "F..." and "Data," the cursor appears as parallel lines with arrows to the left and the right. You can use this cursor to expand the column, allowing you to read "Color" [instead of “Co...”].

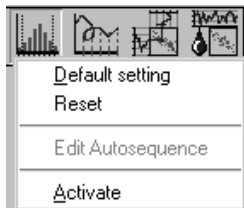
Graph and axis definition is a rather complicated example of a dialog box, but it illustrates well the concept of hierarchy in dialog boxes.

Basic options that are often changed are at the top of the dialog box hierarchy. In the graph and axis definition, for example, a quick glance reveals which data channels are represented and how. These can be changed directly on the top layer.

Less common options are located one layer “deeper“ to allow room for the essential ones. They can be reached by a button. Standard features such as OK, Cancel, Delete, Change, and Close are also accessed by buttons. The Help button is always in the bottom right-hand corner. It provides explanations of the individual dialog parameters.

Default Settings for Functions

The properties of any object can be changed at any time and maintained in a diagram or block diagram (see the explanation of dialog boxes above). These settings, however, apply only to the object at hand or the mathematical function which has just been called. The next time the mathematical function is called, the default setting will appear again. To change settings permanently, use Default setting.



Default setting on the function bar (use right-mouse button)

To reach the default settings for a function, click on the Function bar with the **right mouse button** (for example on an analysis symbol in the optional DIAdem® CALC device). A context menu appears which includes the **Default setting**. Activate this menu item with the left mouse key, and the appropriate configuration dialog box will appear.

After you exit with Save changes, the changes you have made to the settings will become permanent. In the optional DIAdem® GRAPH device you can change default settings for axis systems, tables, and background graphics; in the optional DIAdem® CALC device all mathematical functions are affected. In optional DIAdem®-CALC, the standard settings of the functions can be reproduced with “Reset.” The related action can be executed with “Activate.” The function bar for the Autosequences can be assigned an Autosequence using “Default” and it can be removed with “Delete default.” The Autosequence currently assigned to the icon can be edited by clicking “Edit.”

Note: The altered default settings are automatically written into the Desktop file in DIAdem® and thus saved. When the default settings of an action have been altered, they no longer affect objects that have already been used in a diagram or block diagram!

Commands



Part of the DIAdem® GRAPH Tool bar

The Tool bar which extends horizontally above the DIAdem® Working area contains the commands you will need most commonly for working with any of the DIAdem® devices. Some of these are basic commands such as Delete, Open and Save as; others are device-specific commands. The most important commands in the optional DIAdem® GRAPH device are: Print, Output to clipboard, various commands for aligning objects to each other, the magnifying glass and Sketch presentation. Most important in DIAdem® VIEW are graph definitions and various types of cursors.

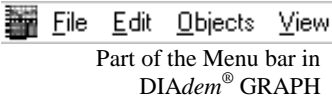


Sketch Mode in DIAdem® GRAPH

Activate an object in DIAdem® GRAPH. As soon as you press the Sketch mode button, the object is faded out and is represented only by a place holder.

Symbolically representing objects as rectangles makes it possible for you to work with them quickly and easily even in diagrams containing numerous objects.

Menus



All of the functions and commands needed for any device in which you are working are found in text format in the Menu bar located above the Tool bar. In these menus any feature can be accessed and executed via the keyboard instead of the mouse.

Use the <Alt> key to access the Menu bar. Then type the underlined letters for individual menu items on your keyboard. When a second menu opens up, choose a feature from it and execute it directly by again typing the underlined letter for the desired menu item.

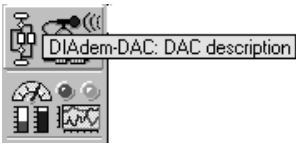
Note: You can also use arrow keys to select a menu item and execute it with the <Enter> key.

DIAdem Help



Use DIAdem® Help to explain, describe and clarify the program. There are three separate types of help in DIAdem®: Tool tips for the user interface, context-sensitive help in dialog boxes, with explanations of all parameters, and the Help menu with explanations grouped by subject matter.

Tool tips

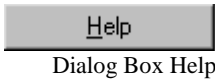


Tool tips

You have already used Tool tips several times during the description of the DIAdem® interface to learn the meaning and function of a symbol. Bring up Tool tips by letting the mouse pointer rest for a moment on the unknown symbol. A yellow “banner” soon appears with a brief explanation of the symbol.

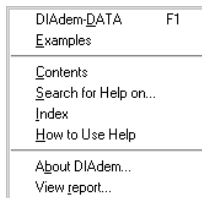
You can choose **long Tool tips** in the Options menu (under General). Then the function of a symbol will be described with more than just one word.

Dialog Box Help



Dialog boxes are used whenever the settings for an object need to be precisely adjusted. You can get context-sensitive help for dialog boxes and parameters in them by pressing the Help button found in any dialog box. Dialog box Help explains each of the parameters in the open dialog box, and what parameters lead to what results. More complete explanations and related topics are available through references.

Help Menu



The DIAdem® DATA Help menu

To reach the Help menu, use the question mark in the Menu bar. In the Help menu you will find a description of the active DIAdem® device, the contents of the main Help subjects, Search for Help on... and View report.

The first line of the Help menu is reserved for a description of the **Device** currently running. In the Help menu to the left, this is DIAdem® DATA. Descriptions of devices are arranged so that the design and functionality and characteristics of each DIAdem® device are discussed first; then you learn how to work with the device.

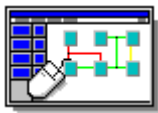
You can access the main Help file in DIAdem® through **Contents** in the Help menu. Working with DIAdem® in general and the DIAdem® devices in particular are described here. These explanations are intended for the user who wants to learn the basics about the design of the program and how to use it.

On the other hand, if you need to learn something about a specific concept or a special topic, use the menu item **Search for Help on...** Enter a search concept. Then choose from the list of subjects the one which best answers your question. The **Glossary** is especially useful as a source of DIAdem® definitions.

The **Report** is a DIAdem[®] record of the previous DIAdem[®] sessions with the start and finish of each work session, along with error messages and warnings and the corresponding dates and times. You can find out more about the nature and meaning of these messages from Report in the Options menu. You can also delete the report there.


Active Help: Demos and Examples

The examples and demos are in general intended as solutions to specific tasks in a DIAdem[®] device. You can start these examples directly from DIAdem[®] Help.



Sample demos in Help

Click on the question mark in the Menu bar, then choose Examples. Click on a device symbol to go directly to the list of corresponding examples.

With the examples, there are differences in the level of complexity between the demo sequences, applications and templates. The demo sequences are short film sequences, which present the creation of a graphic DIAdem[®]-GRAPH, for example. The applications and templates demonstrate not only the spectrum of application for the program, they can also be used as the basis for your own (partial) solutions. For this purpose, press the info button  before the particular example, for a display of a task description and the files used.



Start Example

The Start button is used to start the example; and <ESC> cancels the display, measurement, or Autosequence.

To use a demo you have opened as a pattern, save it under a new name in the user directory (..\diadem\user\dac). Since these solutions are not directed towards specific tasks, you can use them as building blocks in material you are working on by transferring them with the clipboard.

Copy and Insert

You can mark the entire display or block diagram with <CTRL + A>. To select a portion of either, expand the blue frame to the desired dimension while holding down the left mouse button. Then you can copy the selected portion to the clipboard with <CTRL + C> and insert it back into another block diagram in the Working area at the position of the mouse cursor with <CTRL + V>.

Options



Desktop Settings

The various program settings in DIAdem[®] can be accessed via the “Settings” menu. The “Desktop Parameters” include all the workshop-related settings such as the menu points *General*, *Parameter file*, *Device-specific*, *Memory organization*, *GPI-DLL Registration* and *Report*. In the single devices, you will also find device-specific settings such as the hardware assignment and packet processing, or the page layout (in the optional DIAdem[®]-GRAPH device) to name a few.

Desktop Settings

General Settings

The Desktop settings include the **General Settings**, such as those for program behavior (warnings, warning tone for errors, long Quickinfo), for the data format and channel characteristics as well as the selection of other ASCII editors, in particular for the Autosequences.

The path selection (see Directory structure) and the specification of the standard files to be loaded for all the DIAdem[®] devices are made in the sub-menu with the same name. Although the library paths can only be altered using the settings, DIAdem[®] retains the path the last file was loaded from as the user path, for each device.

Device-specific

Device-specific settings include, for example, specifying the memory form in DIAdem[®]-DATA, the ASCII data and the data checks.

Note: Another start file can be entered here. By the way, if no file name is entered here, no template will be loaded in the appropriate device!

- Memory organization The **organization of the memory area or data area** can only be altered when no DIAdem[®] device is active. This means that all the DIAdem[®] devices can be closed with the window menu with "Close all". As soon as only the SHELL is displayed, the size of the data area can be increased or decreased. For these settings to become effective, DIAdem[®] has to be restarted. This is performed automatically if you affirm the appropriate request.
- Define Report The **Report** contains a record of the DIAdem[®] program start and finish, error messages and confirmation messages. The extent of the Report, as well as the associated Editor, with which the memory format is selected, can be defined.

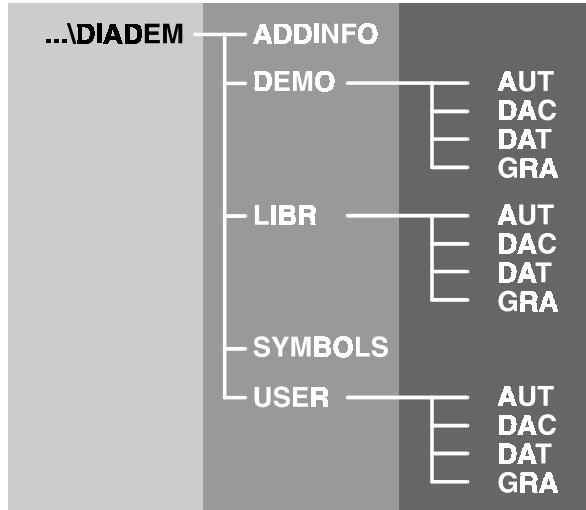
The Device-Specific Settings

Depending on which DIAdem[®] device is open, other settings specific to this device also appear with the Desktop settings, such as, for example, the page layout and the color palette in the DIAdem[®]-GRAPH device. They are explained briefly in the following.

Directory Structure

When you install DIAdem[®], the setup program creates the directory structure shown below on the path you enter. This structure consists of three directory layers.

Standard directory structure



- I. In the **Program directory** (e.g., c:\diadem) you will find the program files (*.exe, *.dll), control files and others such as the Readme file.
- II. The first sub-directory layer serves to organize the remaining files (ADDINFO, DEMO, LIBR, SYMBOLS and USER).

You will find all the practice examples from the manual and the patterns (example.*) in the DEMO directory. These can be used whenever you start the program. The library directory LIBR contains all the examples and demos that can be started from Help (you choose during installation whether to install these). Neither the demo files nor the Libr files should be changed by individual users. Instead personal copies (which *can* be changed) should be stored in a personal directory, for example USER1, etc. This is especially important when you run DIAdem[®] on a network. The LIBR, SYMBOLS and ADDINFO sub-directories contain systems files necessary for DIAdem[®]. They should *never* be changed.

The user path can be changed using the Autosequence "ChDir", which is connected to the twelfth function symbol. This applies globally, i.e. the same for all the DIAdem[®] devices.

- III. The individual files are located on the second sub-directory layer, each in the appropriate directory:

- AUT** Autosequences (*.aut), compiled Autosequences (*.auc), list files (*.lst), variable definitions (*.vas), user dialogs (*.cod),
- DAC** Block diagrams (*.dac), sub-block diagrams (*.sub), control file (*.atr), message file (*.asc)
- DAT** Data header file (*.dat), data file (*.r48, u.a.)
- GRA** Picture definition (*.lpd), meta files (*.wmf)

Saving and Loading Settings

While you are working with DIAdem[®], you will have to modify the standard settings according to your requirements. The program settings are stored in the Desktop file (**desktop.ddd**). When you leave DIAdem[®], modifications are registered and you are asked if you want to save them. You should save your personal settings in your own Desktop file, so you don't lose them.



Save Desktop under
New Name

First close all the DIAdem[®] devices with "Close all" in the "Window" menu. Don't worry: the contents of the window are retained, even if they have not yet been saved. Then click to the diskette symbol in the command line. Now you can save your settings in a new Desktop file.

In order for them to take effect, DIAdem[®] is now automatically shut down. You will now be asked whether the files are to be saved and DIAdem[®] will start again with your settings.



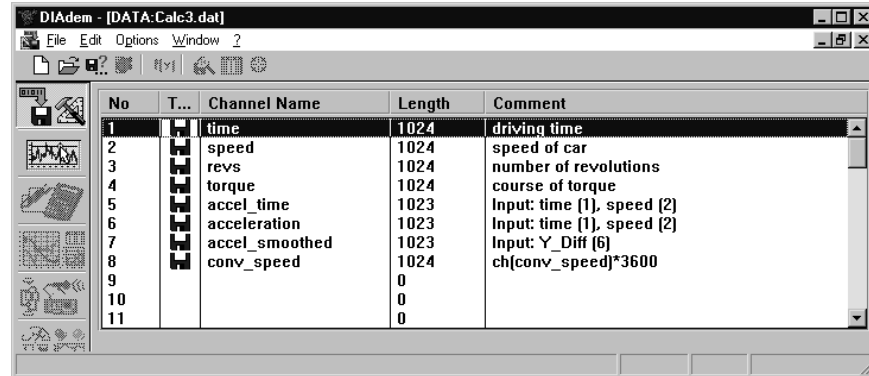
Load Desktop file

DIAdem[®] starts with the Desktop file desktop.ddd. If you are working on various projects, which require varying settings in DIAdem[®], they can be saved in various Desktop files. The associated Desktop file is then to be loaded with each project. Don't be startled when DIAdem[®] is restarted. This is necessary in order for the settings in the newly-loaded Desktop file to take effect.



DIAdem Data: Loading and Saving Data

The functions of DIAdem® DATA available with the DIAdem®-SHELL allow you to manage data: you can open and save data, and import external data. Data is organized in channels, with each channel representing an independent series of data. The data may originate directly from measurement by an external device connected to your PC or may be in file format. All the DIAdem® devices use the data in the Data area.



The DIAdem®-DATA Tool bar allows you to open and save data files and delete all files in the Data area.



Access context menus with the right mouse button

The DIAdem®-DATA Working area gives you an overview of open data channels. From the Working area you can cut, copy, paste or delete data channels.

Context menus play an important role in DIAdem®-DATA. Different functions appear in a menu depending on whether you click the right mouse button in the data overview or in the Channel contents.

The Data Area



DIAdem® -DATA

Select DIAdem® DATA by clicking on the corresponding button on the Device bar.

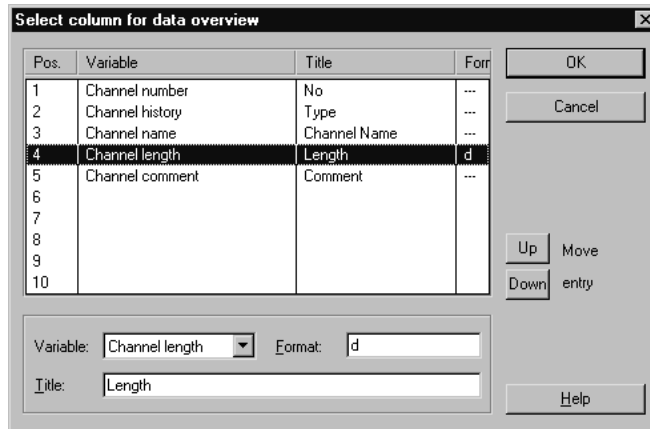
You can see key information on your stored data at a glance in the Channel overview

An overview in table format appears in the Working area, representing the data channels currently open in the Data area. This overview includes the name, index number, and other information such as the length and type (origin) of each data channel. You can make the columns larger or smaller as you wish to enhance readability. Simply move the column dividers in the Title bar by holding down the left mouse button.

No.	T...	Channel name	Length	Maxim...	Comment
1		Time	1024	2048	Driving time
2		Speed	1024	2048	Speed of the car
3		Revs	1024	8192	Number of revolutions
4		Torque	1024	2048	Course of torque
5		Formula results	1024	1048576	sin(ch(3))
6		Formula results	1024	1048576	cos(ch(3))
7		Temperature_1	1024	8192	Acquired channel
8		Temperature_2	1024	8192	Acquired channel
9		Temperature_3	1024	8192	Acquired channel
10			0	2048	
11			0	2048	

You can alter the appearance of the data overview by changing the order of the columns. Select Data overview in the Options menu. The clicked line can be moved with the Up and Down buttons. Confirm with "OK" and the column order will be altered accordingly.

Using Options
to move lines



Data Resources

Data may originate from various sources. In the illustration above, various symbols and descriptions represent the origin (type) of data in the column under T... (Type): Data which has been input, read in, calculated and measured, or is “free.” Free channels do not yet contain any data.

Channel lengths and
number of channels

Data in DIAdem® is organized into channels. A data set may contain several data channels, which may be of unequal length. Each individual channel represents a series of logically connected independent numbers. The maximum channel length and the maximum number of channels are practically unlimited, since up to 2 billion values are possible. The resulting data matrix is dynamically adjusted to the current data stock. If more channels arise than were preset, DIAdem® extends the data matrix accordingly. The channel length is also dynamically extended to the actual number of values. The channel length and the number with which DIAdem® is to be started is specified in the “Options” menu at the DIAdem® main level (i.e. if none of the DIAdem® devices are open) in the menu point “Memory organization - Data area.” As this involves a complete reorganization of memory, these alterations do not become effective until the program is automatically restarted.



The Data area exists only at program runtime! Manual changes to the Data area are temporarily registered, but are not permanently stored until the data set is stored on your hard drive. Data sets to which changes have been made should be saved under a new name so that the original data is still accessible.

Sample Data Set

The data opened by default was acquired during an automobile test drive. Included are the driving time, speed and the motor rpm and torque.

If you have already made changes in the Data area after starting DIAdem®, open the sample data set ‘data.dat’ from Open in the File menu. For more information on opening files, see the end of this chapter.

Copying, Pasting, and Deleting Data Channels

Not only does the Working area in DIAdem® DATA offer you a data overview; you can also copy, paste and delete data channels in the Working area. You can perform these operations on individual channels or on groups of channels.

Marking multiple channels *Mark all four channels by holding down the left mouse button and dragging the mouse over the desired channels.*

You may also mark the first data channel by clicking with the mouse and then clicking on the last channel while the Shift Key is held down. You can mark separate, non-contiguous data channels in the same manner: click on the channels with the left mouse button while the Control Key is held down.

Cutting and pasting channels Click on the right mouse button. Choose the option “Cut” from the Context menu. After confirmation the marked channels will be deleted from the Data area and copied into the Windows clipboard. Click with the mouse on the second line of the channel overview. Paste in the contents of the clipboard with <CTRL + V>.

Cut channels are pasted in from the Windows clipboard at the marked location.

In this case that leaves a free channel in the first line of the Working area.

No	T...	Channel Name	Length	Comment
1			0	
2	<input checked="" type="checkbox"/>	Time	1024	driving time
3	<input checked="" type="checkbox"/>	Speed	1024	speed of car
4	<input checked="" type="checkbox"/>	Revs	1024	number of revolutions
5	<input checked="" type="checkbox"/>	Torque	1024	course of torque
6			0	
7			0	
8			0	
9			0	
10			0	
11			0	

Saving and Opening Data Sets

Data in the Data area is only present during program runtime. It is deleted as soon as a new data set is opened in DIAdem® DATA or when the program is terminated. To use this data in the future you must save it to the hard drive.



Save Data as...

To save the data set, click on the corresponding symbol in the Tool bar. Save the edited data set to the demo path (...\\diadem\\demo\\dat) under the name example1.dat. The data set can also be saved directly with its name, using the file menu.

A bit of theory: as soon as you have saved data, DIAdem® stores two files with the same names on the data path: the actual data file, usually with the extension *.R32, and the associated header file with the extension *.DAT.

The **header file** contains all the information required to open the (numeric) data files. The header file contains not only the general data set description, but also all the information required to read in the single channels of the data file(s). The **data file** contains the numeric data, saved in one or more channels.



Delete all data

The whole data area is emptied with the “empty page” symbol in the tool bar. In the following, the example file “Data.dat” should be loaded from the hard disk, because this data is used in the following chapters of the manual.



Open new data file

Click on the Open symbol in the Tool bar. Choose the file data.dat, which has the demo path (...\\diadem\\demo\\dat). Confirm your selection with “OK”.

The newly opened DIAdem® data channels now appear in the overview. They are thus available in the Data area to be used by other DIAdem® devices.

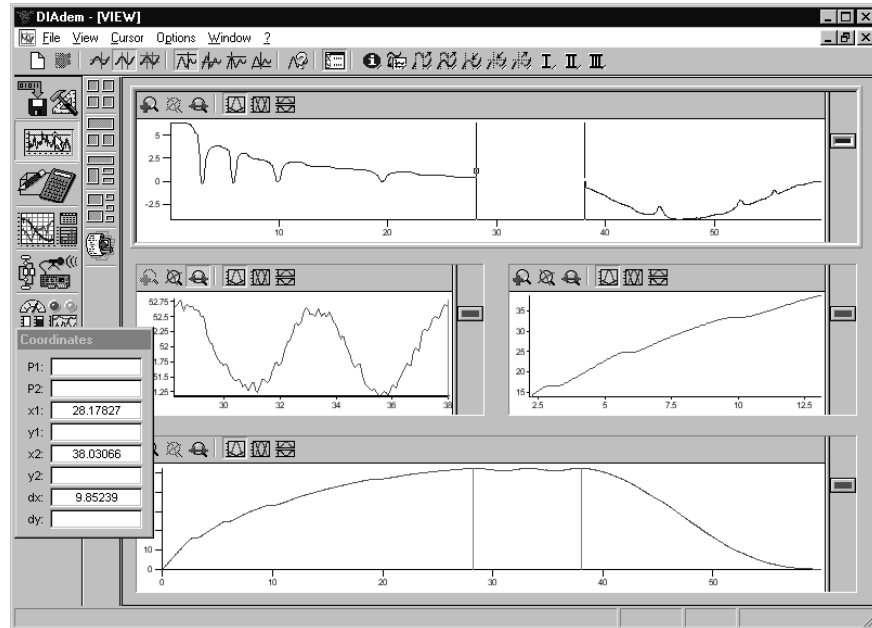
Note: The last path [from which a data file was loaded] is used as a new user path in DIAdem®-DATA for the current session.



Apart from DIAdem® data files, other external data can be imported using the File menu. The user can extend the list of available file formats by including appropriate GPI file import/export filters. Information about these filters can be requested in the “Options – External file type info” menu. You will find more details about the GfS Programming Interface GPI in the program help.

DIAdem VIEW: Viewing, Measuring & Editing Data

DIAdem® VIEW allows you to view, measure and edit your data. Data may be displayed as graphs defined by an X and Y channel of the data area in various axis systems. Various cursors are used for inspecting the graphs, using which you can zoom, scroll or carry out measurements.



DIAdem® VIEW Module bar

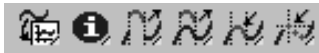
The DIAdem® VIEW Module bar determines the way in which the screen is divided up. You will find various possibilities for standard and customized screen partitions in the corresponding Action bars.

After double-clicking on an axis system, you can coordinate the data channels to be displayed, thereby defining the graphs. A legend can be displayed beside each axis system showing the data channel name, the unit, the cursor coordinates and any expressions at will. Use the graph symbol between the axis system and the legend to copy a graph into another axis system by grabbing it with the mouse and moving it into the target axis (drag and drop).



Part of the DIAdem® VIEW Tool bar

In the Tool bar you will find various types of graphics cursors used to inspect graphs, as well as various measurement cursors with which you can find characteristic graph points. Other useful features are the symbol for turning the coordinate display off and on and the feature Delete all graphs.



Command icons assigned Autosequences

In addition to the standard functions, other functions can be assigned to the command icons, which are marked with a yellow triangle, as Autosequences (requires the Autosequence option).



Axis-specific Tool bar

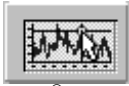
Each DIAdem® VIEW axis system has its own axis-specific Tool bar which you can use to enlarge a selected region of the graph (zoom and scroll) and, in the case of several axes with different value ranges, change the scaling of the Y-axis.

Viewing Data as Graphs



Load data in DIAdem®-DATA

The data file "Calc3.dat" has been used for the screen display on the first page of the chapter. If you have modified the example data set in the DIAdem®-DATA device, which is loaded automatically, load the data file "Data.dat" from the user data path (...\diadem\demo\dat).



DIAdem® VIEW

To work with DIAdem® VIEW, click on the corresponding button in the Device bar.

The DIAdem® VIEW Working area contains several axis systems in which data from the Data area may be viewed as graphs. Note that the active axis system is displayed with a highlighted frame while the axis of the passive windows does not have a highlighted frame. The cursor can be moved with the mouse through the active axis system, whereas it simply "follows along" in the passive system when the value range is the same.

Graph Definitions: Entering and Deleting Graphs in an Axis System

To enter a graph into an axis system, coordinate any set of X and Y channels in the graph definition. Of course several graphs may be entered into an axis system.



Double-clicking on an axis system opens the graph definition

Double-click (click twice in rapid succession) on the upper axis system. The Graph definition dialog box appears.

The Graph definition gives you an overview of previously defined graphs in the active axis system. In our example this line is still blank.



Entering new graph(s)

To specify the data channels you wish to display, click on the "New entry..." button. Choose the data channel "Time" as the X channel and "Speed" as the Y channel. Exit the sub-dialog box with "OK".

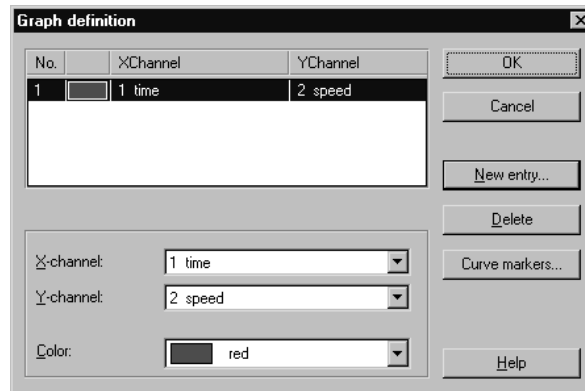
Note: Two or more graphs can be defined at once for the same basis. Use the X channel, and mark the two Y channels with the right mouse key. After "OK", two graphs are entered in the list.



Deleting graph

This new graph entry now appears in the overview in the main dialog box. If you wish to, you can later delete the graph from the axis system with Delete.

The Graph definition dialog box



Graph points can be emphasized with colored symbols, as it will be shown in DIAdem®-GRAPH, using the "Graph markers".



Graph symbol

After you exit the Graph definition with OK, the graph is entered into the active axis system. At the same time, the corresponding graph symbol appears beside the axis system, a small rectangle in the corresponding graph color, red.

Using the Graphics Cursor in DIAdem View

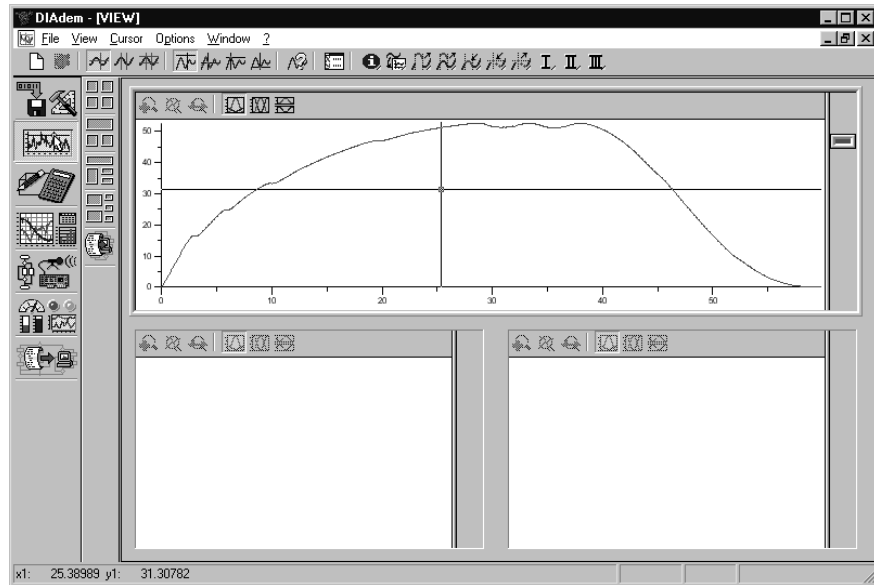
A number of graphics cursors are available to move or measure one or more graphs. You can choose from a crosshair, frame or band cursor. Use the mouse to access the cursor (in the active axis system only). The graphics cursor follows along passively in the other axis systems to the extent the range of values agree.



Crosshair cursor

The crosshair cursor, used for example to measure graph coordinates

The crosshair cursor consists of horizontal and vertical cursor lines which can be moved independently. The point of intersection defines the X and Y coordinates, which appear in the Status line as X_1 , and Y_1 .



Positioning the crosshair cursor

Whenever you press the left mouse button and hold it down in the active axis system, a small cross appears. When you move the mouse, the crosshair cursor “snaps” to the mouse coordinates and follows any further mouse movements.

Note: If you move the mouse over one of the crosshairs, the graphics cursor changes into a horizontal ($\sqrt{\quad}$) or vertical arrow (\cdot). At this point you can hold the left mouse button down and move the cursor line horizontally or vertically.

Using the Cursor Position to Measure a Graph

The intersection point of the crosshair cursor is surrounded by a small square. This square is used to follow the path of the graph. The other cursor types also use this “measuring square”.

The intersection point of the crosshair cursor is surrounded by a small square. This square is used to follow the path of the graph. If you choose another of the cursor types, the “measuring square” will remain at an intersection point.



Free Cursor

By default, the graphics cursor is set to move freely, allowing the cursor to be moved anywhere in the active axis system. If you select other positioning settings, certain graph points will be sampled and selectively displayed in the Status line.



Delete all data

The whole data area is emptied with the “empty page” symbol in the tool bar.

In the following, the example file “Data.dat” should be loaded from the hard disk, because this data is used in the following chapters of the manual.




Graphics cursor

Choose the graphics cursor in the command line. When you move the mouse, the crosshair stays on the graph and moves from point to point along it. In this manner you can display coordinates for any point along the graph.

Note: The *Maxima-cursor* and *Minima-cursor* can be switched on. When on these settings, the graphics cursor moves from one extreme value to the next.

Graph Legend: Displaying the Axis-Oriented Display

The legend can be displayed next to any axis system.



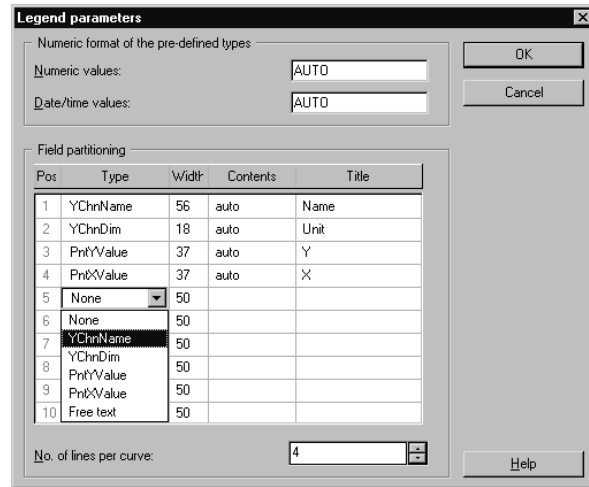
 Displaying legends

Move the mouse cursor over the right border of the axis system. When the table cursor appears with two vertical lines, hold the left mouse button down. Then move the legend off to the left.

The name of the Y data channel, the unit and, with the corresponding graphics cursor, the X and Y coordinates are shown in the legend. It is possible to add additional displays and define their arrangement.

Double click on the legend and the parameters dialog box appears. Click on "Type" in the 5th line and select "Free Text".

The form of the coordinate display can be changed.

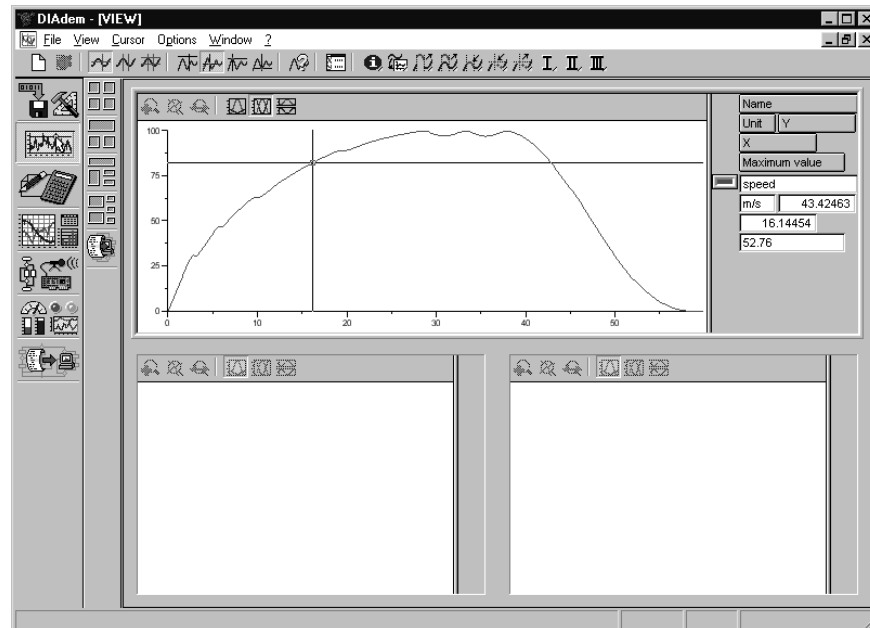


OK

Close the dialog with "OK".

Now, the channel name, the channel unit, the maximum value are displayed in the legend, as well as the graph coordinates of the graphics cursor position, which are updated continuously.

Legend with graph data as well as the maximum value as the result of a formula



Global Coordinate Display: Displaying Cursor Coordinates in Overview Format

The current coordinates of the graphics cursor, represented in the unit of measure of the active axis system, are shown in the status line. You can also choose to have an overview of the coordinate display.



Coordinate display

First activate the frame cursor. Then turn on the coordinate display in the Tool bar.

A window appears with the current cursor coordinates of the active axis system. This window may be positioned anywhere on the screen. For the frame cursor, the X and Y coordinates and the distances for horizontal and vertical cursor lines (dx, dy) are displayed.

Coordinate display with frame cursor coordinates

Coordinates	
P1:	277
P2:	
x1:	16.14454
y1:	43.42463
x2:	21.93552
y2:	47.88644
dx:	5.79098
dy:	4.46181

Axis-local Scaling: Various Graphs in one Axis System for Clarity

If graphs whose value ranges are different are to be compared with one another in an axis system, the depiction can be improved by choosing a different scaling mode. The scaling mode is set separately for every axis system.



Graph definition

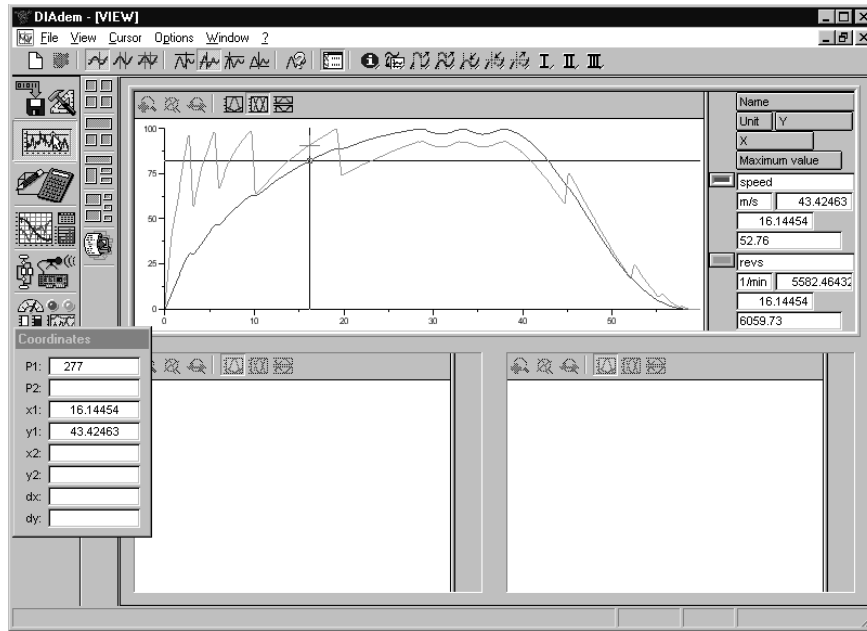
Define one more graph in the upper axis system. Call the graph definition and set a new graph with the X-channel "Time," the Y-channel "Rotational Speed" and the color "Green." Click "OK" twice and return to the working area.



Axis-local scaling, here: 1 System [%]

Since the absolute values of the rotational speeds are 100 times higher than the absolute speeds, the speed curve is merely displayed as a colored line on the abscissa. In this case, it is advisable, to switch the scaling mode for that axis system to "1 System [%]." The labeling of the ordinate will now be done referred to the entire Y-value range as a percentage.

In a case of several graphs with different value ranges, a scaling that is more favorable for the depiction should be chosen



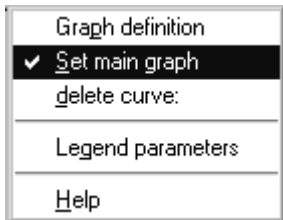
Note: The depiction can be done in separate sub-axis systems with the scaling “n Systems” [physical].

Define main graph To carry out measurements on graphs, one of the two should be defined as the main graph. This definition is made in the context menu of the corresponding graph symbol.

Open the context menu with a click of the right mouse button on the red graph symbol and select “Set main graph.” When you call this context menu again, you can see that the main graph has been set.

In the case of several graphs in an axis system, the main graph is defined via the context menu of the graph icon

Now, if you move the crosshair cursor, it remains fixed on the red graph. Another crosshair is displayed on the green graph. The point coordinates of the main graph are displayed in the legend, as specified.




As mentioned above, if the value range is the same, the cursors in the passive axis systems follow along. If you have selected the “Free Cursor,” the crosshairs in the passive windows orient themselves according to the graph coordinates. If you have activated another cursor, e.g. “Maxima-cursor,” the crosshair will be oriented in the passive windows according to the point number; the relevant coordinates can be read in the legends.

Depending on where you click in DIAdem®-VIEW [with the right mouse button] the context menu is displayed with other functions. For example, the image mode toggle may be displayed. Note that the image mode determines whether a SHELL is displayed or suppressed.

How to Copy or Delete a Graph

Any graph that has previously been defined can be copied into another axis system using the drag-and-drop procedure and the corresponding graph symbol.

 Copying a graph with the graph symbol activated.

Drag the red graph symbol by pressing on the left mouse button. With the left button still held down, move the graph symbol into the lower left axis system and release the left mouse button.

A copy of the graph and the corresponding red graph symbol now appear in the desired axis system.

Deleting a graph

You can also delete a graph from the axis system using the graph symbol. Click on the green graph symbol; it darkens. Then press the <DELETE> key. Alternatively, deletion can also be done from the context menu of the graph icon

Deleting or copying multiple graphs

Multiple graphs can be deleted from or copied to the same axis system. Select the corresponding graph symbols with the mouse and the <CTRL> key.

Using Zoom, Scrolling and Screen Partition

Zoom: Enlarging Graph Segments

If you want to inspect a given region of a graph with increased precision, you can use the DIAdem® VIEW zoom feature to portray selected portions of the graph in enlarged format. The zoom feature can be executed only with a band or frame cursor.

The band cursor consists of two parallel vertical cursor lines which define a segment of width delta X (designated dx in the Status line). The X position of the cursor line that is set first is used for the X₁ coordinate, to which is also assigned the small square, the so-called “Hot Spot.” The X-position of the cursor crosshair that is set last is used for the X₂-coordinate. The same applies correspondingly for the Y₁- and Y₂-coordinates of the frame cursor.



Activating the band cursor

Copy the graph from the upper axis system into the axis system on the lower left. Then activate the band cursor in the Tool bar.

Move the band cursor by clicking between the two cursor lines and moving the mouse right or left while the left mouse button is held down. You can define the width of the band cursor by positioning the cursor crosshairs.



Widening the band cursor range

Move both band cursor lines with the left mouse button held down until the region of the graph you wish to inspect lies between the two cursor lines.

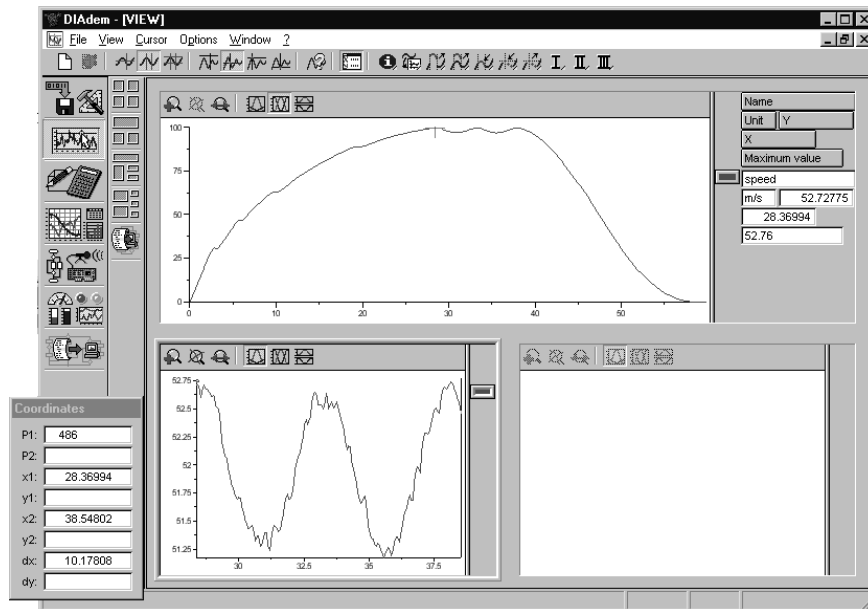


Zoom in

Now turn the zoom on for this axis.

The graph segment delineated by the band cursor now fills up the entire axis system.

A graph in maximized view and the band cursor section in zoomed view



If several graphs are defined in the same axis system, graph segments [that are contained within the band cursor] will be equally magnified. Note that you can zoom in on segments recursively, thus inspecting smaller and smaller graph segments.



Zoom off

After you turn off the zoom, the original graph is displayed, no matter how many times you have zoomed in.



Frame cursor

The frame cursor is used in the same manner as the band cursor. In addition to horizontal lines, it provides vertical definition.

Scrolling Through Graph Segments

While the zoom feature allows you to examine individual enlarged graph segments statically, the scroll feature allows you to move along the enlarged graph. It is as if the graph were scrolled along under a magnifying glass.



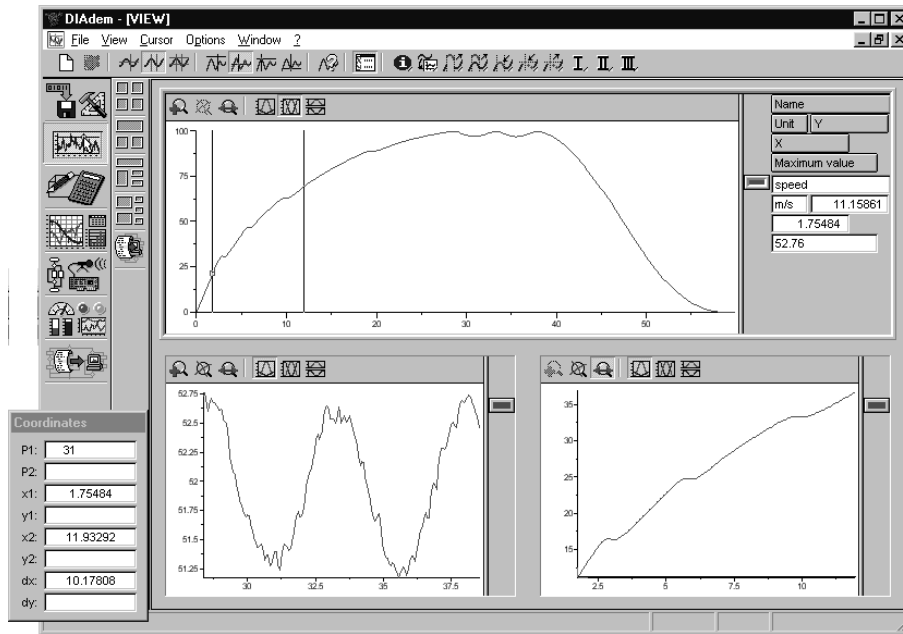
Turning on scrolling

Using the graph symbol, copy the red graph into the lower right-hand axis system. If no band cursor is active, choose one. Widen the segment width as needed. Then activate scrolling in the axis-specific Tool bar.

Now you can let the speed graph move through by holding down the left mouse button while moving the mouse cursor horizontally.

Since the graphics cursor is always visible in axis systems with graphs, the graphics cursor in passive systems follows along correspondingly as long as the X value regions are equal. If zooming is active in an axis system, the graph section that has been set there remains unchanged!

Scrolling through a segment
in the lower right-hand axis system



Apart from directly moving the graph with the mouse, the so-called scrollbar can also be used for moving. For this purpose, the horizontal scrollbar should be activated in the context menu. Now, the graph can also be moved by moving the scrollbar. If you are working with a frame cursor, it is sensible to insert the vertical scrollbar.



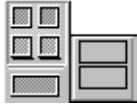
Scrolling off

Scrolling can be de-activated at any time. In contrast to zoom, the last segment viewed stays in place; it is “frozen.” Enlargement can be undone with the Zoom off symbol, since zooming also occurs when scrolling is turned on.

When you activate another axis system, zooming and scrolling retain their settings in the old axis system. This means in terms of the example above that you can place the band cursor in the upper axis system over the speed graph and view the graph enlarged in the lower right-hand axis system.

Screen Partition: Re-arranging Axis Systems

Depending on the task, three axis systems may be too few - or too many, in order to view and compare graph sections of one or more graphs. Modules with both regular and irregular screen partitions are available for this purpose. For the following example, the number of axis systems is to be reduced to two.



Two systems of the same size in a vertical row

Click to the function group of the regular screen partitions with the four squares. Select the two axis systems that are arranged underneath each other.

The defined graphs are retained in all axis systems.

Note that since graphs had been previously entered in more axis systems (than are selected now), the “extra” graph definition is automatically lost. Even if three axis systems were to be selected in a subsequent step, the third axis system remains without graph entries.



Delete all graphs

For further graphical analyses of the same or other data, all the defined graphs in all the axis systems can be deleted in one go with the icon “Delete all graphs” in the toolbar of commands.



Autosequences for graph manipulation and transformation

Special functions for graph manipulation and for documentation as a diagram are realized as Autosequences and require the Autosequence option.

