Getting Started with
HP DAC *Express*

HEWLETT® **PACKARD**

Notices

The information contained in the manual is subject to change without notice.

Hewlett-Packard makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Hewlett-Packard shall not be liable for errors contained herein or direct, indirect, special, incidental, or consequential damages in connection with the furnishing, performance, or use of the material.

Trademarks

HP DAC Express™ is a trademark of Hewlett-Packard Company.

Microsoft®, Windows®, MS Windows®, and Windows NT® are U.S. registered trademarks of Microsoft Corp.

HP DAC Express at a Glance

HP DAC Express provides a graphical user interface that allows you to easily setup a multi-channel analog measurement, saving time-domain data to disk for future processing. To assure the acquired data is valid, you can monitor the acquisition in real time.

When you start HP DAC Express, it automatically finds all supported instruments, provided each instrument is properly configured. The following shows HP DAC Express and identifies its main areas:
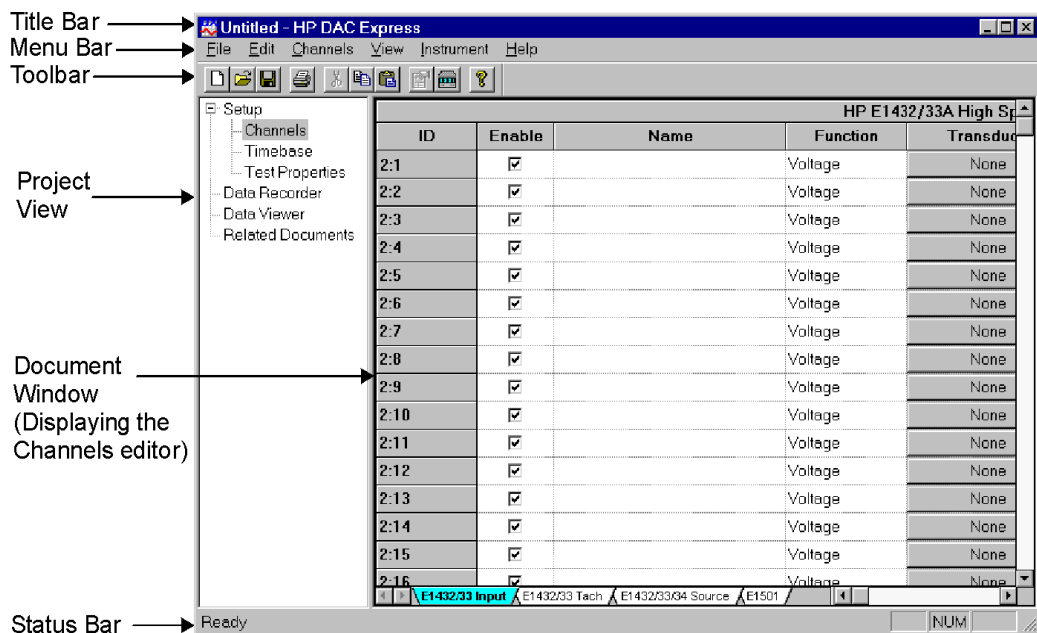
- Title Bar—displays the name of the current project. If the project has not been saved, displays Untitled.

- Menu Bar—provides dropdown menus in the standard Windows® style. The menus displayed change with the selection in the project view.

- Toolbar—provides toolbar buttons as shortcuts to many menu functions. Each button can be identified by its tool tip, which appears when you hold the mouse pointer over the button.

- Project View—provides a hierarchical "tree view" of the HP DAC Express user interfaces and allows you to select the currently displayed user interface.

- Document Window—displays the HP DAC Express setup editors, data recorder, and any recordings or related documents in the project. The selection in the project view determines the display in this window.

- Status Bar—displays messages about the current task or process.

The following describes the user interfaces you can select in the project view:

- Setup—displays an information screen telling you how to access the following setup editors:

  - Channels—allows you to edit the configuration for each channel in your system. The tabs at the bottom of the Channels editor allow you to switch between the various instruments and Signal-Conditioning Plug-ons (SCPs) in your system. The Channels editor contains a row for each channel in your system and columns that contain identification and configuration information for each channel.

  - Timebase—allows you to specify when recording starts and stops. In addition, it allows you to set independent measurement rates for different types of instruments.

  - Test Properties—provides a place for you to enter information about the recording. Entering information is optional.

- Data Recorder—allows you to enable or stop a recording. Actual recording starts after the conditions you set in the Timebase editor have been met. You can add displays to monitor the data acquisition in real time.

- Data Viewer—displays an information screen telling you how to view previously recorded data. If data has been recorded and saved in the current project, its recording name is listed below Data Viewer and the setup editors for the recording are listed below the recording name. Selecting a recording name allows you to view the data displays that were in place when the data was recorded, add displays, and playback the data. In addition, you can select a region of the data file to export.

- Related Documents—displays an information screen telling you how to add various documents to the project. If documents have been added to the current project, they are listed below Related Documents.

1 Installing HP DAC *Express*

2 Getting Started

Need Assistance?

About this edition

Hewlett-Packard Sales and Service Offices

1

Installing HP DAC *Express*

This chapter provides instructions for installing HP DAC Express, including instructions for installing VISA and configuring the interface.

Installing HP DAC Express

To install HP DAC Express, do the following:

1. Check that your system meets the minimum requirements.

   See "Minimum System Requirements" on page 1-4, "Supported Hardware" on page 1-5, and "Hardware Considerations" on page 1-6.

2. Install your VXI hardware.

   See the *Getting Started with VXI* manual and the documentation that came with your hardware.

   If you purchased a preconfigured HP DAC Express data acquisition system or your hardware is already installed, you can skip this step.

3. Install VISA and configure the interface using one of the following procedures:

   • For an IEEE-1394 interface, see "To configure an IEEE-1394 interface" on page 1-7.

   • For an NI VXI-MXI-2 interface, see "To configure an NI VXI-MXI-2 interface" on page 1-9.

   • For an HP-IB interface, see "To configure an HP-IB interface" on page 1-10.

   If you purchased a preconfigured HP DAC Express data acquisition system that included the optional Desktop System Controller (Opt 040), connect the VXI mainframe to the Desktop System Controller using the cable supplied with the HP E8491A, turn on your VXI mainframe and Desktop System Controller, then go to Step 5 on page 1-3.

   If you want to use HP DAC Express with only simulated instruments, you can skip this step.

   If VISA is already installed and your interface is already configured, verify that you have the required version of VISA installed. For an IEEE-1394 interface, you must have HP VISA version G.02.02 or later installed. For NI-VXI-MXI-2 interface, you must have NI-VXI/VISA version 2.0 or later installed.

4. Install HP DAC Express.

Insert the "HP DAC Express" CD into your PC and wait for the Setup program to auto-start, then follow the instructions on the screen.

If you have installed and run MATLAB, you can select the **Standard Data Format Toolbox for MATLAB** in the Select Options dialog box. Although you may be able to install the toolbox with a lower version of MATLAB, you must have version 5.3 or higher installed to use the toolbox.

5. Start HP DAC Express.

From the Windows **Start** menu, select **Programs**, then select **HP DAC Express** followed by **HP DAC Express**.

6. Verify that HP DAC Express found the supported instruments.

During startup, HP DAC Express searches for supported instruments then displays the instruments it found in the Channels editor. The tabs at the bottom of the Channels editor show the instruments that were found. The ID column shows the instrument's slot and channel numbers. Alternately, you can click the ▣ (Instrument Settings) button to see which instruments were found in each slot.

If HP DAC Express found all the supported instruments go to Chapter 2, "Getting Started," to learn the basics.

If you are using Windows® 95 with an IEEE-1394 interface or an HP-IB PCI interface and HP DAC Express did not find any instruments, ensure that the interface card is properly configured. See "To reconfigure a PCI interface" on page 1-12.

If HP DAC Express did not find all the supported instruments, use one of the following to resolve the instrument communication problems:

• For an IEEE-1394 or HP-IB interface, use the **VISA Assistant** program and the *Getting Started with VXI* manual.

• For an NI VXI-MXI-2 interface, use the **T&M Explorer** program and the documentation provided with the NI VXI/VISA software.

Minimum System Requirements

- Windows$^{®}$ 95 or Windows NT$^{®}$ 4.0 (service pack 3)

- 90 MHz Pentium processor

- 32 MB RAM

- 30 MB available space on hard drive plus space for data storage (approximately 4 bytes/sample to record or export HP E1413B/C data, and 2 bytes/sample to export HP E1432/33A data)

- CD-ROM drive for installation

- One of the following interfaces:

  - HP E8491A IEEE-1394 (FireWire) VXI module and PCI card (bus must be PCI 2.1 compliant)

  - National Instruments VXI-MXI-2 module and PCI card

  - HP E1406 HP-IB Command Module and HP-IB card (This interface only supports HP E1413B/C Scanning A/D)

- Display: 15 inch, 600 X 800 resolution

Recommended System Requirements

- Windows NT 4.0 (service pack 3)

- 200 MHz Pentium processor or faster

- 64 MB RAM or more

- 30 MB available space on hard drive plus space for data storage (approximately 4 bytes/sample to record or export HP E1413B/C data, and 2 bytes/sample to export HP E1432/33A data)

- CD-ROM drive for installation

- HP E8491A IEEE-1394 (FireWire) VXI module and PCI card (bus must be PCI 2.1 compliant)

- Display: 17 inch, 768 X 1024 resolution, or larger

Supported Hardware

- HP E1413B/C 64-Channel Scanning A/D

  - HP E1501A through HP E1518A Signal Conditioning Plug-ons

- HP E1432A 16-Channel 51.2 kSa/s Digitizer plus DSP with option UGV (local bus)

  - All breakout boxes supported by HP E1432A

  - Options ANC (32 MB RAM, recommended), 1D4 (source), AYF (tachometer), 1DD (delete 12 channels), and 1DE (delete 8 channels)

- HP E1433A 8-Channel 196 kSa/s Digitizer plus DSP with option UGV (local bus)

  - All breakout boxes supported by HP E1433A

  - Options ANC (32 MB RAM, recommended), 1D4 (source), AYF (tachometer), and 1DL (delete 4 channels)

- HP E1434A 4-Channel 65 kSa/s Arbitrary Source

  - Options 1D4 (source) and 1DM (delete 2 channels)

- HP E1562D/E/F VXI Data Disk

Hardware Considerations

- Only a single mainframe is supported. HP DAC Express doesn't support multiple mainframes daisy-chained together.

- HP DAC Express systems with an HP E1432/33A Digitizer must also have an HP E1562D/E VXI Data Disk. Although HP DAC Express only supports one HP E1562D/E, you can install an HP E1562F VXI Data Disk to increase throughput storage capacity.

- All HP E1432/33A Digitizer modules and HP E1562D/E/F Data Disk modules use the local bus and must be placed next to each other in the mainframe with the HP E1562D/E/F in the furthest right-hand slot.

- The VXI-MXI-2 module uses the local bus and must be physically separated by at least one slot from HP E1432/33A Digitizer modules, HP E1562D/E/F Data Disk modules, and HP E1434A Arbitrary Source modules with the local bus option.

- You should not install an HP E1432A 51.2 kSa/s Digitizer and an HP E1433A 196 kSa/s Digitizer in the same mainframe. If you install both in the same mainframe, the sample rate is limited to the HP E1432A 51.2 kSa/s Digitizer module's sample rate and a measurement accuracy (phase error) problem exists at higher frequencies.

- In HP E1432/33/34A Digitizer/Source modules with option ID4 (source), the external trigger connector is replaced with the optional source connector. Therefore, at least one HP E1432/33/34A Digitizer/Source module must not have option 1D4 for HP DAC Express to support external trigger.

- The IEEE-1394 PCI card is incompatible with certain SCSI controllers and the HP part number 5182-5446 LAN card. If your IEEE-1394 PCI card does not work, you may need to replace your SCSI controller or LAN card.

To configure an IEEE-1394 interface

Use this procedure to install HP VISA and configure an IEEE-1394 (FireWire) interface.

1. Check that the HP E8491A IEEE-1394 VXI module is installed in slot 0 of your VXI mainframe.

2. Install the IEEE-1394 PCI card into your PC following the instructions included with the card.

3. Connect the VXI mainframe to the PC using the cable supplied with the HP E8491A.

4. Turn on your VXI mainframe and PC.

   They must remain connected and on for the entire installation procedure.

5. If you are using Windows 95 and the New Hardware Found or Update Device Driver Wizard dialog box appears, do the following:

   a. Follow the instructions on the screen, selecting **Driver from disk provided by hardware manufacturer** if prompted.

   b. When prompted, insert the "HP I/O Libraries for Instrument Control" CD, version G.02.02 or later.

   c. Select your CD drive designator using the **Browse** button (for example, E:) when prompted, then click on OK.

   d. After the IEEE-1394 driver is automatically installed and configured, open the CD drawer.

6. Install HP VISA from the "HP I/O Libraries for Instrument Control" CD, version G.02.02 or later.

  a. Insert the CD then wait for the Setup program to auto-start.

  b. Follow the instructions on the screen, selecting **Install HP E8491 VXI Components** when prompted.
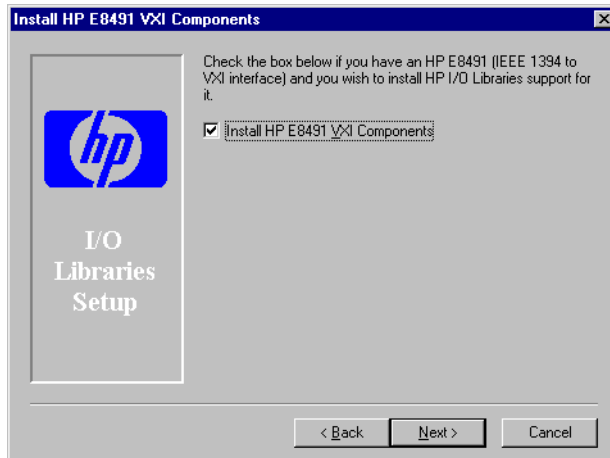
  c. At the end of the I/O libraries installation, select **Configure interfaces automatically** when prompted.
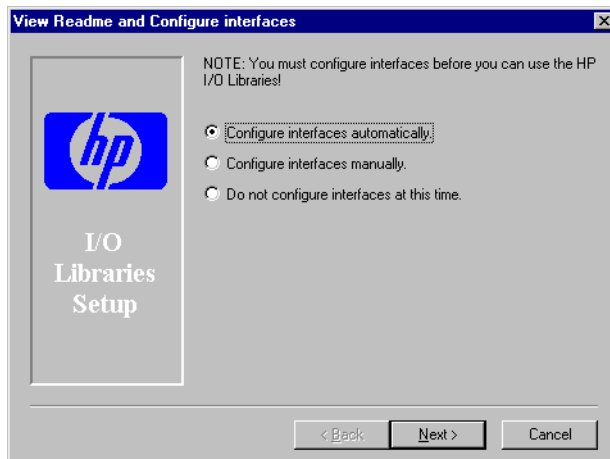
  d. Shutdown and restart Windows if prompted to do so at the end of the installation.

The IEEE-1394 interface is now configured. Return to Step 4 on page 1-3.

To configure an NI VXI-MXI-2 interface

Use this procedure to install NI-VXI/VISA and configure a National Instruments VXI-MXI-2 interface.

Note

The VXI-MXI-2 module uses the local bus and must be physically separated by at least one slot from HP E1432/33A Digitizer modules, HP E1562D/E/F Data Disk modules, and HP E1434A Arbitrary Source modules with the local bus option.

1. Check that the VXI-MXI-2 module is installed in slot 0 of your VXI mainframe.

2. Install the National Instruments MXI-2 PCI card into your PC following the instructions included with the card.

3. Connect the VXI mainframe to the PC using the supplied cable.

4. Turn on your VXI mainframe and PC.

   They must remain connected and on for the entire installation procedure.

5. Install NI-VXI/VISA Version 2.0 or later following the documentation provided with the software.

   Do a complete Express installation, then use the NI Resource Manager to configure the VXI-MXI-2 interface.

6. Set the User Window Size (A24 Space) to 1 MB.

   a. Start the T&M Explorer program as described in the documentation.

   b. From the T&M Explorer - System View, right click on **PCI-MXI-2**, then select **Hardware Configuration**.

   c. Select the **PCI** tab, then set the **User Window Size** to **1 MB**.

   d. Shutdown and restart Windows to make the changes take effect.

   The other VXI-MXI-2 default settings are acceptable.

The NI VXI-MXI-2 interface is now configured. Return to Step 4 on page 1-3.

To configure an HP-IB interface

Use this procedure to install HP VISA and configure an HP-IB interface.

1. Check that the HP E1406 HP-IB Command module is installed in slot 0 of your VXI mainframe.

2. Install one of the following HP-IB cards into your PC following the instructions included with the card:

- HP 82340/41 HP-IB (ISA card)
- HP 82350 HP-IB (PCI card)

3. Connect the VXI mainframe to the PC using the HP-IB cable supplied with the HP E1406 HP-IB Command Module.

4. Turn on your VXI mainframe and PC.

They must remain connected and on for the entire installation procedure.

5. If you are using Windows 95 with a PCI Card and the New Hardware Found or Update Device Driver Wizard dialog box prompts you to install a driver, do the following:

a. Follow the instructions on the screen, selecting **Driver from disk provided by hardware manufacturer** if prompted.

b. When prompted, insert the "HP I/O Libraries for Instrument Control" CD.

c. Select your CD drive designator using the **Browse** button (for example, E:) when prompted, then click on OK.

d. After the IEEE-1394 driver is automatically installed and configured, open the CD drawer.

6. Install HP VISA from the "HP I/O Libraries for Instrument Control" CD.

    a. Insert the CD then wait for the Setup program to auto-start.

    b. Follow the instructions on the screen, selecting **Configure interfaces automatically** near the end of the I/O libraries installation.

    c. Shutdown and restart Windows if prompted to do so at the end of the installation.

7. Download the required HP E1413 driver into the HP E1406 HP-IB Command module using the HP VIC program.

    a. Insert the "Hewlett-Packard Universal Instrument Drivers" CD then wait for the program to auto-start.

    b. Select **Launch Installer**, then follow the instructions on the screen selecting **Run HP VIC** when prompted.

    c. Follow the directions in HP VIC to configure your hardware and download the HP E1413 driver into the HP E1406 HP-IB Command module.

The HP-IB interface is now configured. Return to Step 4 on page 1-3.

To reconfigure a PCI interface

If you are using Windows 95 with an IEEE-1394 interface or an HP-IB PCI interface and HP DAC Express did not find any instruments, use this procedure to ensure that the interface card is properly configured.

1. Click on **File** then select **Exit** to close HP DAC Express.

2. Right-click on **My Computer**, select **Properties**, and then select the **Device Manager** tab in the System Properties dialog box.

3. Expand the heading labeled **Other Devices**, then select one of the following:

   • For an IEEE-1394 interface, select the entry labeled **PCI Card**.

   • For an HP-IB PCI interface, select the entry labeled **Hewlett-Packard HP-IB Interface Card**.

4. Click on **Remove** to delete the selected entry.

5. Click on **Refresh** to update the configuration.

   • For the IEEE-1394 interface, a new entry appears under the heading **1394 Bus Controller**.

   • For the HP-IB interface, a new entry appears under the heading **HP-IB Interfaces**.
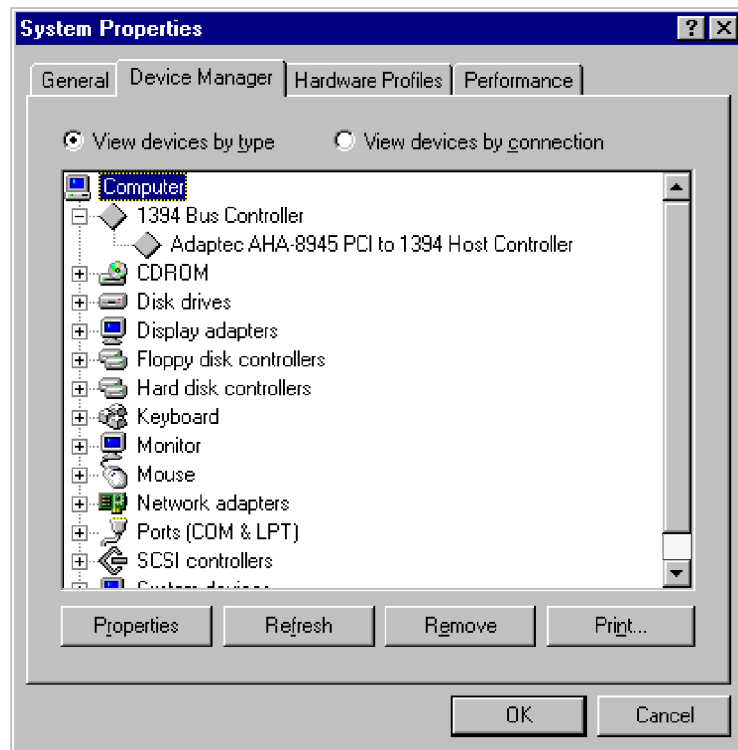
6. Click on **OK** to close the System Properties dialog box.

7. From the Windows **Start** menu, select **Programs**, then select **HP I_O Libraries** followed by **I_O Config**.

The I/O Config program starts and displays its configuration screen.
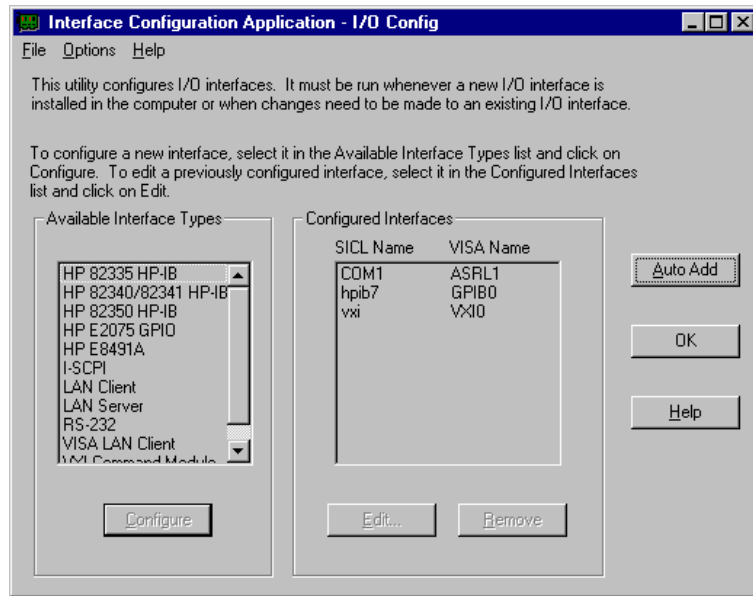
8. Click on **Auto Add** to configure the interface.

   • For the IEEE-1394 interface, a new entry, **VXI0**, appears below the heading **VISA Name**.

   • For the HP-IB interface, a new entry, **GPIB0**, appears below the heading **VISA Name**.

9. Click on **OK** to close the I/O Config program.

10. Restart HP DAC Express.

   From the Windows **Start** menu, select **Programs**, then select **HP DAC Express** followed by **HP DAC Express**.

11. Verify that HP DAC Express can now find the supported instruments.

   During startup, HP DAC Express searches for supported instruments then displays the instruments it found in the Channels editor.

   If HP DAC Express found all the supported instruments go to Chapter 2, "Getting Started," to learn the basics.

   If HP DAC Express did not find all the supported instruments, use the **VISA Assistant** program and the *Getting Started with VXI* manual to resolve the instrument communication problems.

2

Getting Started

This chapter provides the basics to help you get started using
HP DAC Express.   For more information, see the HP DAC Express online
help.

Getting Started

Follow these steps to quickly get started using the HP DAC Express software:

1. Start HP DAC Express.

From the Windows **Start** menu, select **Programs**, then select **HP DAC Express** followed by **HP DAC Express**.

HP DAC Express automatically finds all supported instruments provided each is properly configured. If HP DAC Express displays the "No instruments were found" information screen and you expected instruments, refer to Chapter 1. If you want to use HP DAC Express without instruments, add simulated instruments using the 🖳. (Instrument Settings) button.

2. Setup channels.

Click on **Channels** in the project view. Configure the channels for the type of recording you want to make. See "To setup channels" on page 2-4 for information on editing the setup in the Channels editor.
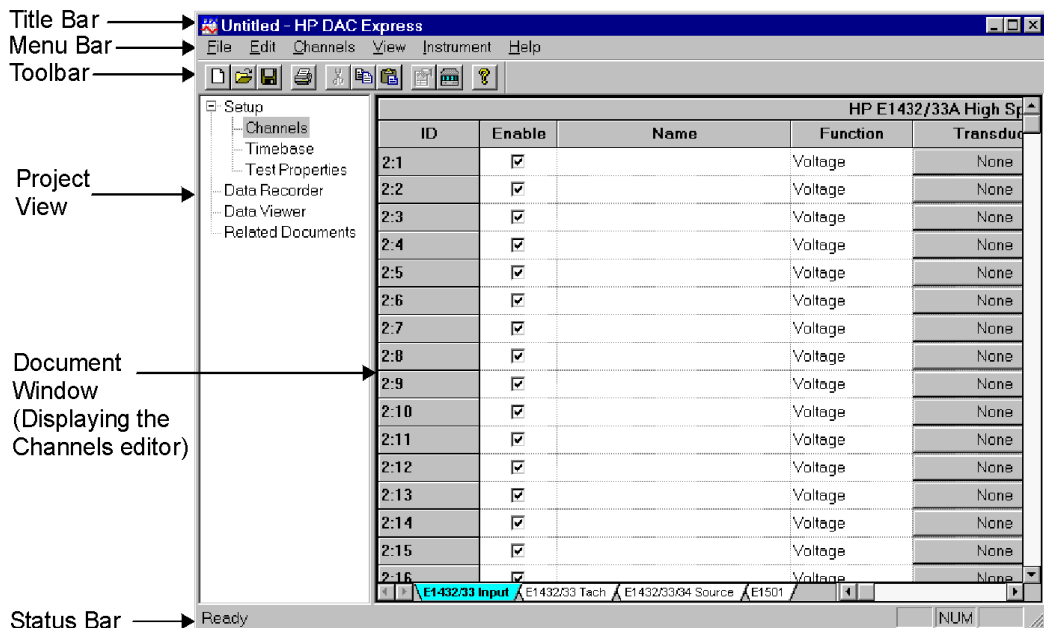
3. Setup recording conditions.

Click on **Timebase** in the project view. Set the start and stop recording conditions, the sample rate for HP E1432/33A Digitizer modules, and the scan rate for HP E1413B/C Scanning A/D modules. See "To setup recording conditions" on page 2-8 for information on editing the setup in the Timebase editor.

4. Add information about your recording.

This step is optional. Click on **Test Properties** in the project view. Enter information about the recording.

5. Add a data display.

Click on **Data Recorder** in the project view. The "Creating Data Displays" information screen appears in the document window. Click on a display button, then click on the information screen. Configure the data display using the dialog box that appeared when you added the data display. See "To add a data display" on page 2-12 for instructions on adding a data display.

6. Save your setup to a project file.

Click on **File**, then select **Save As** to display the Save As dialog box. Select a directory, type in a file name, then click on **Save**. The selected directory is the project directory. When you record data, all static measurement data and all simulated data is saved under this directory.

7. Record data.

Click on the [●] (Record) button. The recording starts when the conditions you set in the Timebase editor have been met. When the recording is finished, the Recording Name dialog box appears. Click on **OK** to accept the default name for the recording. After the recording is saved, the recording name appears in the project view below Data Viewer.

8. View recorded data.

Click on the recording name in the project view. The data displays that were setup when you recorded the data appear. Click on the [▶] (Play) button to start data playback. To stop data playback, click on the [■] (Stop) button. See "To view recorded data" on page 2-16 for instructions on viewing the recorded data.

To setup channels

When HP DAC Express is started, it automatically finds all supported
instruments including all supported Signal Conditioning Plug-ons (SCPs) and
breakout boxes.   In the following example, the tabs located at the bottom of
the Channels editor show that HP DAC Express found an HP E1432A or
HP E1433A Digitizer module and an HP E1413B or HP E1413C High-Speed
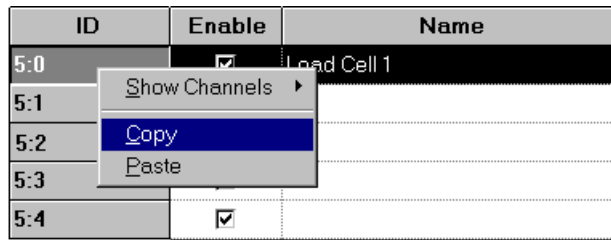Scanning A/D Converter with an HP E1501A 8-Channel Direct Input SCP.
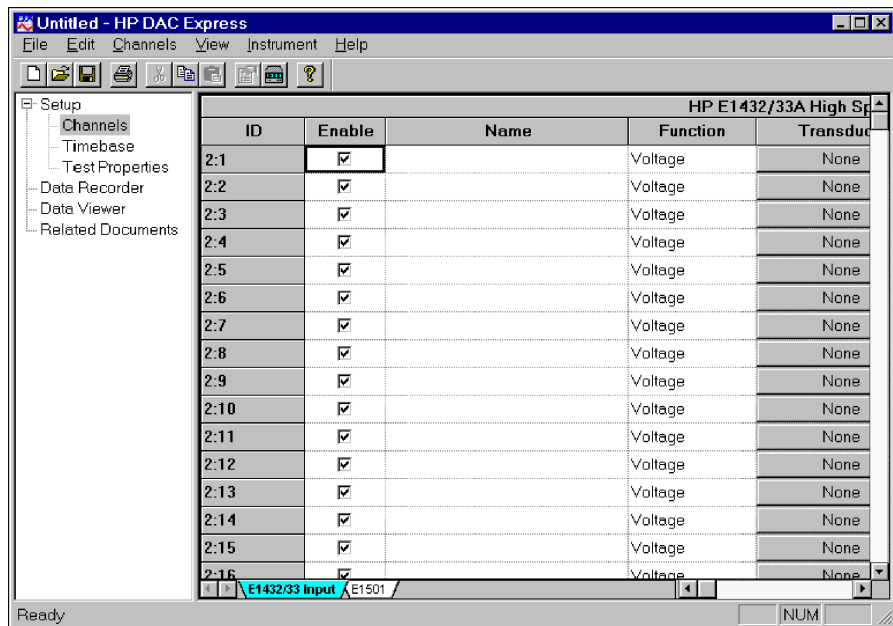
The Channels editor contains a row for each channel in the system and
columns that display identification and configuration information for each
channel. To edit a cell, click on it. If an arrow appears on the right side of the
cell, click on the arrow to display a dropdown list then click on your
selection. If an arrow does not appear, edit the cell by typing. If necessary,
you can adjust the width of each column by clicking and dragging the column
separator lines.

Copying a row

To quickly configure multiple channels, use Copy and Paste. To copy a single row and paste it to one or more rows, do the following:
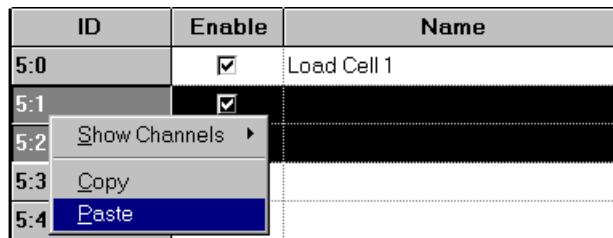
1. Fill out the parameters for the row to be copied. For example, enter the name and parameters for the first channel in the channel list.

2. Left click in the ID cell of the row to be copied. The row is highlighted in black.

3. Right click to display the shortcut menu, then select **Copy** to copy the entire row.

ID	Enable	Name
5:0	☑	Load Cell 1
5:1		
5:2		
5:3		
5:4	☑	

Show Channels ▶
Copy
Paste

4. Left click in the ID cell of the destination row, or click and drag to select multiple rows. The row or rows are highlighted in black.

5. Right click to display the shortcut menu, then select **Paste** to paste the copied parameters into the destination row or rows.

ID	Enable	Name
5:0	☑	Load Cell 1
5:1	☑	
5:2		
5:3		
5:4		

Show Channels ▶
Copy
Paste

6. You can now modify the parameters in the copied row if desired. For example, to change the number in the second row, double-click in the name cell, then highlight the number and enter a new number.

ID	Enable	Name
5:0	☑	Load Cell 1
5:1	☑	Load Cell 1
5:2	☑	Load Cell 1
5:3	☑	

Copying a cell

In addition to copying a single row, you can copy a single cell and paste it to one or more cells within a column, or you can copy multiple cells within a column and paste to same number of cells within a column. To copy a single cell and paste to one or more cells within a column, do the following:

1. Right click on the cell to select it and display the shortcut menu. The cell is highlighted with a black box.

2. Select **Copy** from the shortcut menu.

| Function	Transdu
Temperature	RTD 85
Voltage	Show Channels ▶
Voltage	Copy
Voltage	Paste
Voltage	None

3. Click on a single destination cell, or click and drag to select multiple destination cells. The single or first cell is highlighted with a black box. Any additional selected cells are highlighted in black.

4. Right click to display the shortcut menu, then select **Paste**.

| Function	Transdu
Temperature	RTD 85
Voltage	None
Voltage	Show Channels ▶
Voltage	Copy
Voltage	Paste
Voltage	None

Copying multiple cells

To copy multiple cells within a column and paste to same number of cells within a column, do the following:

1. Click and drag on the cells to be copied. The first cell is highlighted with a black box and the additional selected cells are highlighted in black.

**2.** Right click to display the shortcut menu, then select **Copy**.
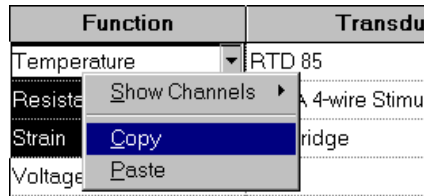
3. Click and drag to select the same number of destination cells.   The first cell is highlighted with a black box and the additional selected cells are highlighted in black.

4. Right click to display the shortcut menu, then select **Paste**.
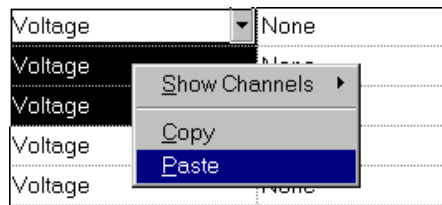
To setup recording conditions

The Timebase editor allows you to set the start and stop recording conditions, the sample rate for HP E1432/33A Digitizer modules, and the scan rate for HP E1413B/C Scanning A/D modules.
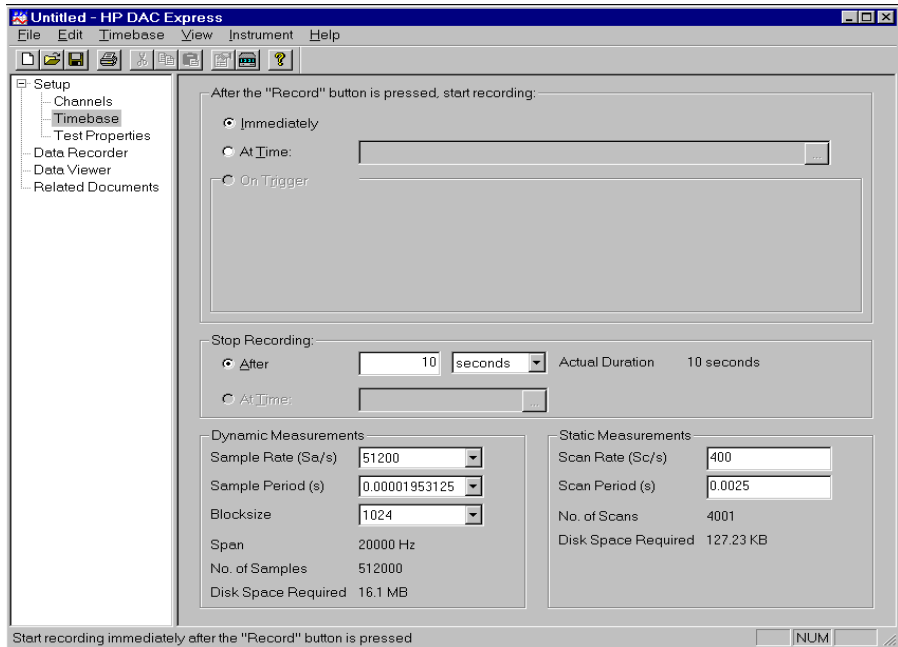
Setting start and stop conditions

When you click on [•] (Record) in the Data Recorder, data recording starts and stops according to the conditions selected here. To set the start and stop conditions, do the following:

1. Select one of the following start conditions:

- Immediately – Data recording starts immediately after you click on Record in the Data Recorder.

- At Time – Data recording starts at the time you specify. Click on [...] to display the Set Date & Time dialog box, then select a date and time. For help setting the date and time, click on the dialog box's Help button.

- On Trigger – This selection is only available if you have an HP E1432/33A Digitizer module in the system. Data recording starts when the trigger conditions you specified are met. Click on [...] to display the Select Trigger Channel dialog box, then select a trigger channel using the dialog box. To specify a trigger level, type in a number from +1 to -1. To specify a trigger slope, click on the field, then click on the arrow to display the dropdown list and click on a slope.

2. Select one of the following stop conditions:

- After – Data recording stops after the amount of time you specify. To specify the amount of time, enter a floating point number, then click on the arrow to display a dropdown list and select seconds, minutes, hours, or days.

- At Time – This selection is available only if you selected **At Time** for the start condition. Data recording stops at the time you specify. To specify the stop time, click on [...] to display the Set Date & Time dialog box, then enter the stop time using the dialog box.

Setting the sample rate and blocksize

If you have an HP E1432/33A Digitizer in the system, the Timebase editor displays a Dynamic Measurements section. To set the sample rate and blocksize, do the following:

1. Set the sample rate by clicking on either the Sample Rate or Sample Period arrow to display the dropdown list, then select the desired rate or period. Changing one, automatically changes the other.

2. Click on the Blocksize arrow to display the dropdown list, then click on a blocksize.

The following information is updated according to your selections:

- The measurement span based on the selected sample rate.

- The total number of samples that will be recorded. The number of samples is based on the sample rate and the recording time.

- The projected number of bytes on the HP E1562D/E/F VXI Data Disk required for this recording. The number of bytes is based on the number of samples that will be recorded.

Setting the scan rate

If you have an HP E1413B/C Scanning A/D in the system, the Timebase editor displays a Static Measurements section. To set the scan rate, do the following:

1. Set the scan rate by clicking on either the Scan Rate or Scan Period arrow to display the dropdown list, then select the desired rate or period. Changing one, automatically changes the other.

The following information is updated according to your selection:

- The number of scans that will be recorded. The number of scans is based on the scan rate and the recording time.

- The projected number of bytes on the PC's hard disk required for this recording. The number of bytes is based on the number of samples that will be recorded. The number of samples is the number of input channels enabled multiplied by the number of scans.

To add a data display

You can add display tabs and data displays to the Data Recorder and Data Viewer. Until a data display is added to a display tab, the "Creating Data Displays" information screen is displayed. The tool box, usually found to the right, allows you to add display tabs and data displays. If the tool box is not shown, right click on the display tab, then select **Display Tool Box** from the shortcut menu. Depending on the instruments in your system, some data displays may be unavailable. The unavailable data displays are shown as inactive buttons in the tool box.
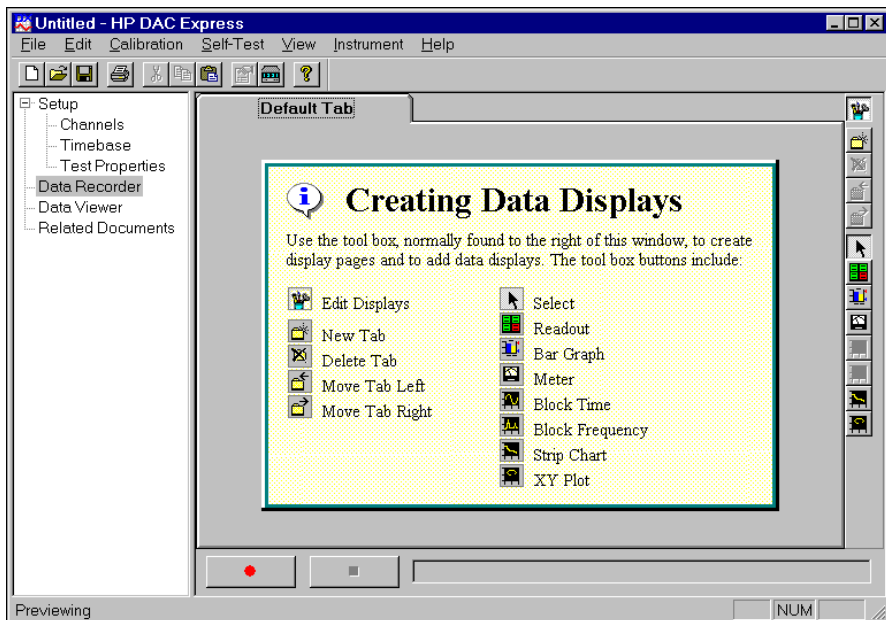
Adding a display tab

To add a display tab, do the following:

1. Click the 🗂 (New Tab) button.

A new display tab appears with the default tab name highlighted.

2. Type in a new name or click on the display tab to accept the default name.

Adding and connecting a data display

The data displays allow you to view the data during data acquisition and during playback. To add and connect a data display, do the following:

1. Add an available data display using one of the following methods:

   • Drag a display button to the display area.

   • Click on a display button then click on the display area.

   • Click on a display button then drag in the display area to size the display.

   The data display appears, and its properties dialog box is automatically displayed. The following shows the properties dialog box that appears when you add a Readout data display to a display tab.
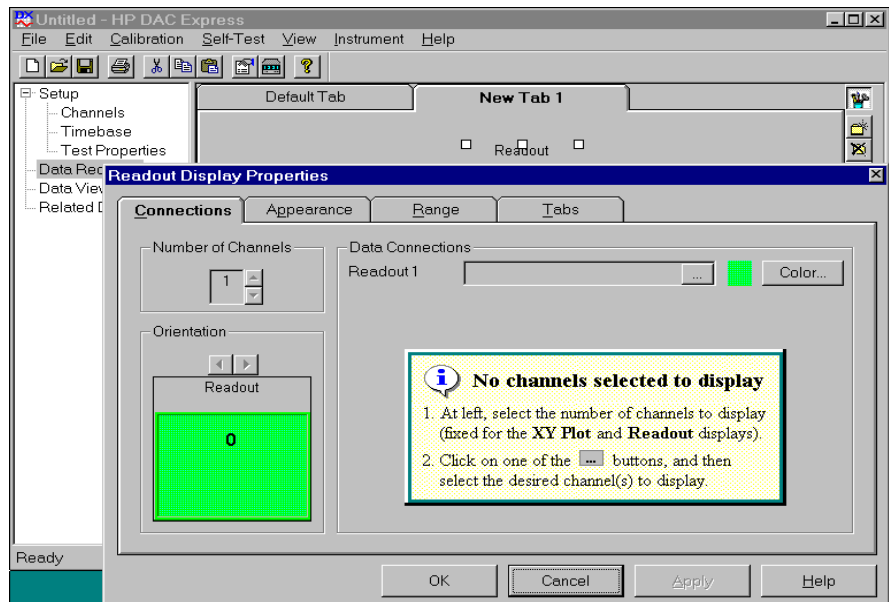
2. For data displays other than Readout and XY Plot, click the Number of Channels up or down arrows to select the number of channels you want displayed.

3. Click the ⬚ button to display the Select Data Channels dialog box.

4. Double-click the module or Signal-Conditioning Plug-on (SCP) to expand the display and view the channels, then select the channels.

   The maximum number of channels you can select is equal to the number of currently unconfigured channels.
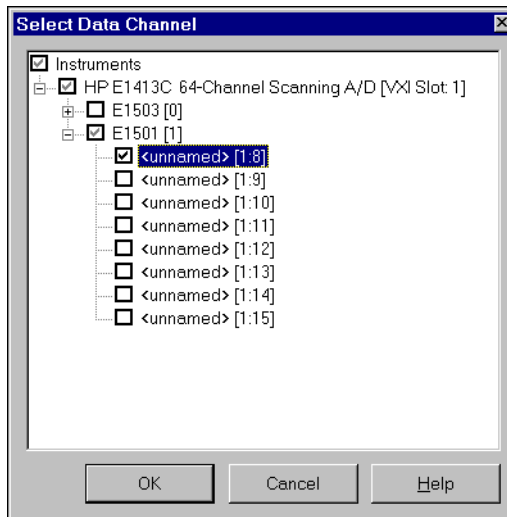
5. Click **OK** to close the Select Data Channel dialog box.

6. Click **OK** to accept the default configuration and close the display properties dialog box.

7. To resize, click the data display then drag an edge or corner.

Copying and pasting data displays

To copy and paste a data display, do the following:

1. Right click on the data display, then select **Copy** from the shortcut menu.

2. Right click on the same or another display tab, then select **Paste** from the shortcut menu.

3. To change its configuration, right click on the data display, then select **Properties** from the shortcut menu.

Showing a data display on multiple pages

To show a data display on multiple display tabs, do the following:

1. Right click on the data display, then select **Properties** from the shortcut menu.

2. Select the **Tabs** tab on the Display Properties dialog box.

3. Click **All** to show the data display on all display tabs or toggle selected checkmarks on to show the data display on selected display tabs.

   Any change to the data display occurs on every tab showing the data display.

Deleting a data display

To delete a data display, do the following:

1. Right click on the data display, then select **Delete** from the shortcut menu.

2. If the Confirm Deletion dialog box appears, click **Yes**.

3. If the Delete All? dialog box appears, the data display is shown on multiple tabs. Click **Current Tab** to delete the data display from the current tab or click **All Tabs** to delete the data display from all tabs.

Deleting multiple data display

To delete multiple data displays, do the following:

1. Press and hold the Ctrl key, then click on each data display.

2. Right click on one of the selected data displays, then click **Delete** from the shortcut menu.

3. If the Confirm Deletion dialog box appears, click **Yes**.

4. If the Delete All? dialog box appears, at least one data display is shown on multiple tabs. Click **Current Tab** to delete the selected data displays from the current tab or click **All Tabs** to delete the selected data displays from the current tab and the selected data display shown on multiple tabs from all tabs.

To view recorded data

The Data Viewer allows you to view previously recorded data including the setup that was used when the data was recorded. To view the setup, double-click on a recording in the project view (the left pane). The Channels editor, Timebase editor, and Test Properties editor appear in the project view below the recording.

When you select a recording in the project view, the upper portion of the document window (the right pane) shows the data displays that were setup when the data was recorded. To add data displays, see "To add a data display" on page 2-12. The lower portion of the document window is called the data browser. The data browser allows you to select the position in time within the data file that is shown in the displays, to control data playback, and to select a region of the data file to export.
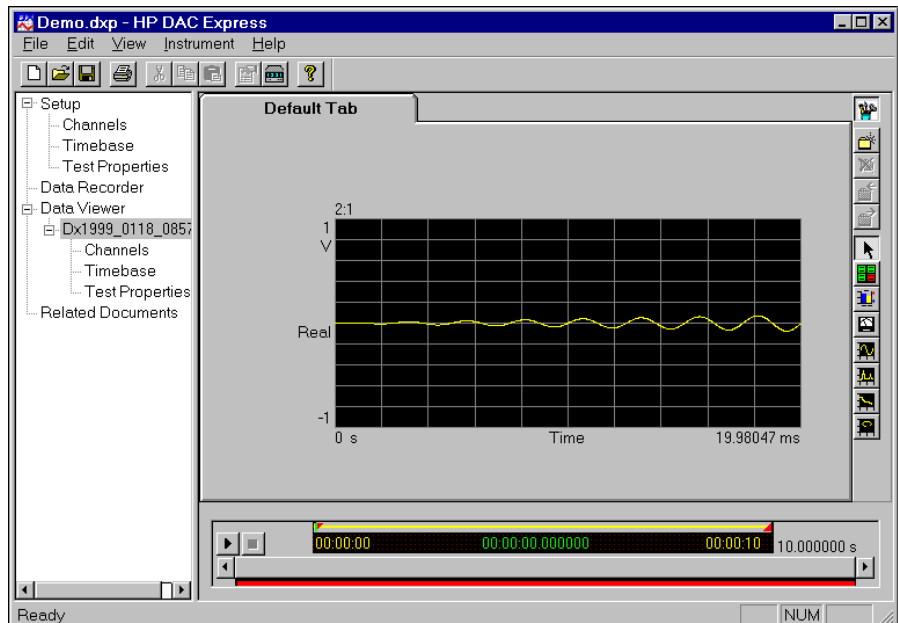
Selecting the data browser channel

The data browser displays the compressed data file for one channel. The data is compressed to fit within the browser window up to a maximum of 50,000 data points. If the data file contains more than 50,000 data points, use the scroll bar below the window to view the entire data file. To select which channel is displayed in the data browser, do the following:

1. Right click on the data browser then select **Data Browser Properties** from the shortcut menu.
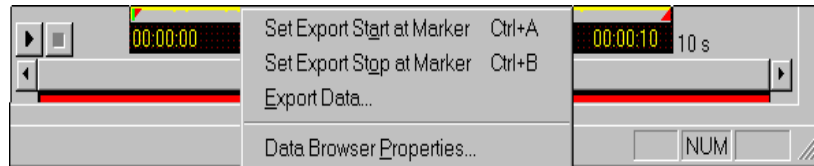
2. Select the **Channel Selections** tab on the Data Browsers Properties dialog box.

3. Double-click the module or Signal-Conditioning Plug-on (SCP) to expand the display and view the channels, then select a channel.

Viewing information about the compressed data file

The Info tab in the Data Browser Properties dialog box contains information about the compressed data file. To view this information, do the following:
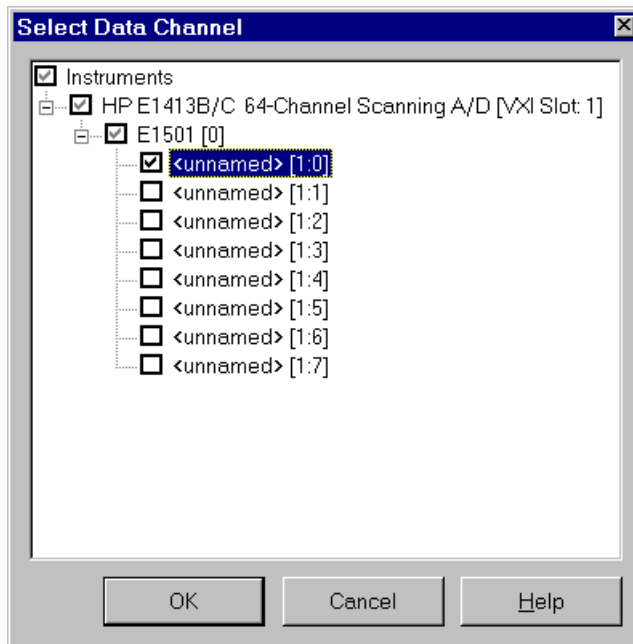
1. Right click on the data browser then select **Data Browser Properties** from the shortcut menu.

2. Select the **Info** tab on the Data Browsers Properties dialog box.

Viewing the recorded data

The green bar in the browser window is the current position marker. It identifies the position in time within the data file that is currently shown in the Data Viewer displays. The current position marker can be moved using the following methods:

• Click the data browser's ▶ (Play) button to start data playback. To stop data playback, click the data browser's ■ (Stop) button.

Select Data Channel	☒
☑ Instruments
⊟ ☑ HP E1413B/C 64-Channel Scanning A/D [VXI Slot: 1]
⊟ ☑ E1501 [0]
☑ **<unnamed> [1:0]**
☐ <unnamed> [1:1]
☐ <unnamed> [1:2]
☐ <unnamed> [1:3]
☐ <unnamed> [1:4]
☐ <unnamed> [1:5]
☐ <unnamed> [1:6]
☐ <unnamed> [1:7]

     OK   Cancel   Help

• Click on the browser window to move the current position marker to the location you clicked.

• Drag the current position marker to the selected location.

• Press the following arrow keys:

Press...	To move the current position marker...
RIGHT ARROW	one data point right
LEFT ARROW	one data point left
CTRL + RIGHT ARROW	one blocksize right
CTRL + LEFT ARROW	one blocksize left

Note   The current position marker must have display focus for the arrow keys to move it. To ensure that the current position marker has display focus, click on the browser window before using the arrow keys.

Note   Depending on the data file's compression factor, you may need to press the arrow keys many times to see the current position marker move. For example, if the compression factor is 50 data points per display point, you need to press the arrow key 50 times to move the current position marker one display point. Likewise, depending on the data file's blocksize, you may need to press the Ctrl+arrow keys many times to see the current position marker move. For example, if the blocksize is 1 data point and the compression factor is 5 data points per display point, you need to press the Ctrl+arrow key 5 times to move the current marker position one display point.
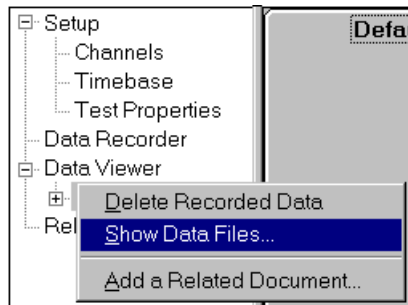
Locating the data files associated with a recording

The data in your recording is saved in files in different locations according to the type of data:

- Dynamic measurement data collected with real instruments is saved on your HP E1562D/E/F VXI Data Disk (required if you are using an HP E1432/33A Digitizer module with HP DAC Express).

- Static measurement data, and all simulated data, is saved under the project directory on your PC's hard disk. The project directory is the location of your project (.dxp) file if you have saved it, or the Windows TEMP directory if you have not.

To locate the data files for a recording, do the following:

1. Click on the recording name in the project view.

2. Select **Show Data Files** from the View menu or right click in the project view, then select **Show Data Files** from the shortcut menu.

Deleting the data files associated with a recording

To delete a recording and its associated files, do the following:

1. Click on the recording name in the project view.

2. Select **Delete** from the Edit menu or right click in the project view, then select **Delete Recorded Data** from the shortcut menu.

Need Assistance?

If you need assistance, contact your nearest Hewlett-Packard Service Office
listed in the HP Catalog, or contact your nearest regional office listed at the
back of this book.   If you are contacting Hewlett-Packard about a problem
with HP DAC Express, please provide the following information:

- Model number:

- Software version:

- Options:

- Date the problem was first encountered:

- Circumstances in which the problem was encountered:

- Can you reproduce the problem?

- What effect does this problem have on you?

About this edition

February 1999: First Edition.

Hewlett-Packard Sales and Service Offices

For more information on Hewlett-Packard test & measurement products, applications, services, and for a current sales office listing, visit our web site, http://www.hp.com/go/tmdir. You can also contact one of the following centers and ask for a test and measurement representative.

United States:

Hewlett-Packard Company
Test and Measurement Call Center
P.O. Box 4026
Englewood, CA 90155-4026
1 800 452 4844

Latin America:

Hewlett-Packard
Latin American Region Headquarters
5200 Blue Lagoon Drive 9th Floor
Miami, Florida 33126 U.S.A.
Tel: (305) 267 4245/4220

Canada:

Hewlett-Packard Canada Ltd.
5150 Spectrum Way
Mississauga, Ontario
L4W 5G1
Tel: (905) 206 4725

Australia/New Zealand:

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Australia
Tel: 1 800 629 485

Europe:

Hewlett-Packard
European Marketing Centre
P.O. Box 999
1180 AZ Amstelveen
The Netherlands
Tel: (31-20) 547-9900

Asia Pacific:

Hewlett-Packard Asia Pacific Ltd
17-21/F Shell Tower, Times Square
1 Matheson Street, Causeway Bay,
Hong Kong
Tel: (852) 2599-7777
Fax: (852) 2506 9285

Japan:

Hewlett-Packard Japan Ltd.
Measurement Assistance Center
9-1, Takakura-Cho, Hachioji-Shi,
Tokyo 192, Japan
Tel: (81-426) 56-7832
Fax: (81-426) 56-7840