Personal DaqViewXL™   User's Guide

> **When using Personal Daq modules to acquire data, computer *energy save* modes can cause false data readings.   Prior to using Personal Daq modules, ensure your computer's *energy save* mode is disabled. If needed, consult your computer's user manual to disable *energy save* (*power suspension*) modes.**

Overview

Personal DaqViewXL is a software component add-in that installs into *Microsoft Excel*™ and provides complete setup and data acquisition within *Excel* under *Windows 98/Me/2000* and */XP*. Acquired data is immediately placed in an active spreadsheet, analyzed and graphically displayed. *Personal DaqViewXL* provides:

- data acquisition and analysis
- report printouts of data text and graphics
- strip-chart graphics for real-time data display
- conversion of data to engineering units
- data editing
- formula creation

After *Personal DaqViewXL* has been installed, you can configure your data acquisition system easily by accessing the desired window from the program's toolbar, i.e., with use of the **Configure Devices**, **Configure Channels**, or **Configure Acquisition** buttons. Each column in the channel-configuration window corresponds to a specific parameter in the data acquisition system. Note that the channels can be configured individually.

In regard to creating data reports, you can embed *Excel* "spreadsheet objects" directly into a word processing program, add text, and print the end result. To revise the report's text, just edit the document as needed. To update the spreadsheet, double-click on the embedded "spreadsheet object" to access *Personal DaqViewXL*; then create and embed a new "spreadsheet object."

Personal DaqView XL supports all models of the Personal Daq family, including expansion modules and provides the engineering unit output required for each configured channel on an individual basis. For example, data for a voltage channel can be returned in volts, while data from a thermocouple is being returned in degrees.

You can use *Personal DaqViewXL's* "scale and offset" feature to automatically convert channel data to custom units and then have the *scale* and *offset* applied to the data prior to its appearing in the spreadsheet. The scale and offset feature is especially handy for transducers such as strain gages because it converts the return voltage value to units such as pounds or units of pressure.

System Requirements

For successful operation of *Personal DaqViewXL* with your Personal Daq system, your computer should conform to the following *as a minimum*:

- PC system with Pentium® processor
- USB port
- *Microsoft Excel*, version 8
- *Microsoft Windows 98SE (Second Edition), Windows/Me/2000* or */XP*
- 16 Mbytes of RAM (32 Mbytes recommended)
- *Energy Save* modes disabled (see the Caution on page 1)

Installation

You will need to use an *Authorization Code* the first time you launch *Personal DaqViewXL*. The code is provided when the application is purchased.

Note 1: The following steps assume that *Personal DaqView* has already been installed.

Note 2: If you are replacing *Personal DaqViewXL* with a newer version, you should remove the older version prior to installing the new application.

To install the *Personal DaqViewXL* application:

1. Run *Personal DaqView*.
2. Select *Authorization* from the **File** pull-down menu. An Authorization dialog box will appear.
3. Type in the code, as it appears on your Authorization Sheet.
4. Click the <**Apply Code**> button.

First Time Use

Personal DaqViewXL is an *Excel* "add-in" that must be loaded into the *Excel* environment before it can be used. Perform the following steps to load *Personal DaqViewXL* into *Excel*:

1. Start *Excel* (refer to Microsoft documentation as needed).

2. Select the "Tools" menu and click on "**Add-Ins**." This will open the "**Add-Ins**" dialog box, as shown below.
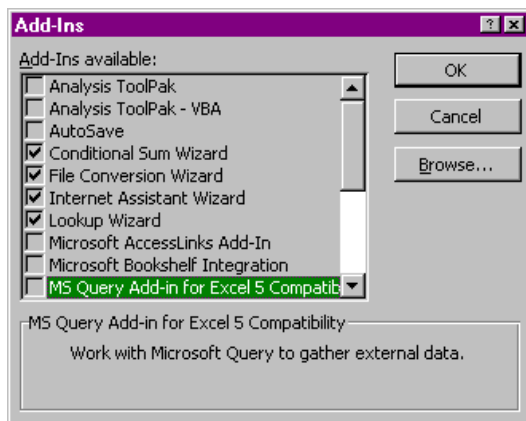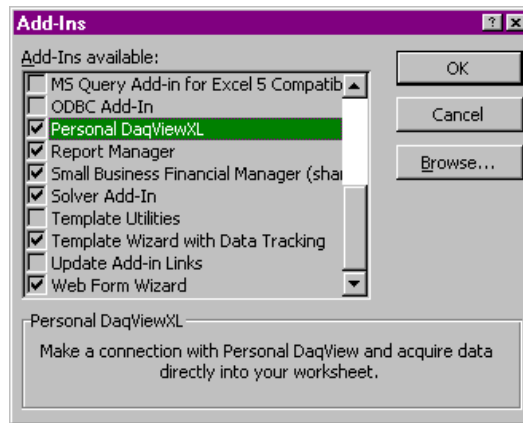

Excel's "Add-Ins" Dialog Box

3. Click the "**Browse**" button and locate the file `pDaqView.xla`. This file is located in the install directory specified by the setup program. Click **OK**.
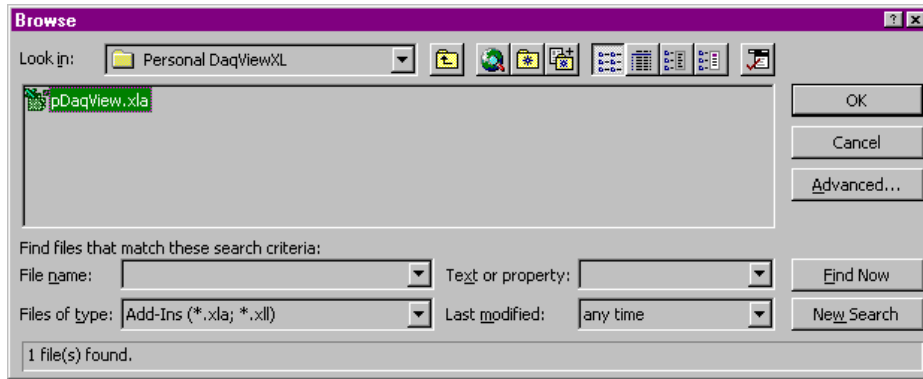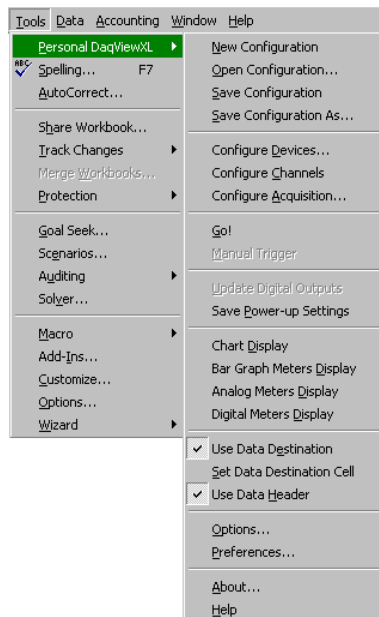

Browse Option Dialog Box

4. Select *Personal DaqViewXL* from the "Add-Ins Available" list. Make sure there is a check next to *Personal DaqViewXL*, and then click **OK**.

Add-Ins Dialog Box with Personal DaqViewXL Selected

5. *Excel* loads the "add-in," creating a *Personal DaqViewXL* item in the Tools pull-down menu and a toolbar.


(1) Configure Devices
(2) Configure Channels
(3) Configure Acquisition
(4) Go!
(5) Manual Trigger
(6) Chart Display
(7) Bar Graph Meters
(8) Analog Meters
(9) Digital Meters
(10) Use Data Destination
(11) Set Data Destination Cell
(12) Use Data Header

Personal DaqViewXL Menu Options   *Personal DaqViewXL Toolbar Options*

After *Personal DaqViewXL* is installed in this manner, it will automatically load whenever you run *Excel*.

6. If you want to start *Personal DaqView* when *Personal DaqViewXL* is used for the first time:
   a) Click the *Personal DaqViewXL* selection (located in Excel's *Tools* pull-down menu).
   b) Choose "**Options…**" (the Options Dialog Box appears).
   c) Select "Start the first time I use Personal DaqViewXL."
   d) Click "**OK**."
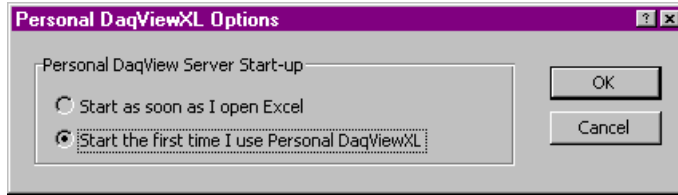
Personal DaqViewXL Start-up Options Dialog Box

7. If you want to start *Personal DaqView* as soon as Excel is opened:
   a) Click the *Personal DaqViewXL* selection (located in Excel's *Tools* pull-down menu).
   b) Choose "**Options…**" (the Options Dialog Box appears).
   c) Select "Start as soon as I open Excel."
   d) Click "**OK**."

Note: After you have launched *Excel* and *Personal DaqViewXL* has been activated, the following dialog box appears if *Personal DaqView* is not running. If this is the case, click "**Yes**" to start *Personal DaqViewXL*.
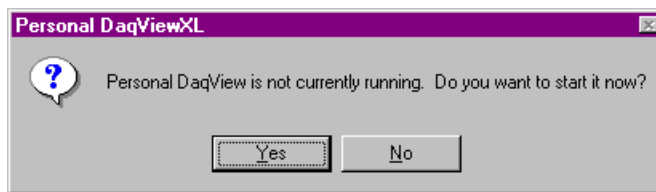
Personal DaqView Startup Confirmation

The following figure shows a partial screen capture of a Microsoft Excel spreadsheet. In the figure, the *Personal DaqViewXL* item has been selected from the Tools pull-down menu. *Personal DaqViewXL's* toolbar can also be seen in the figure.
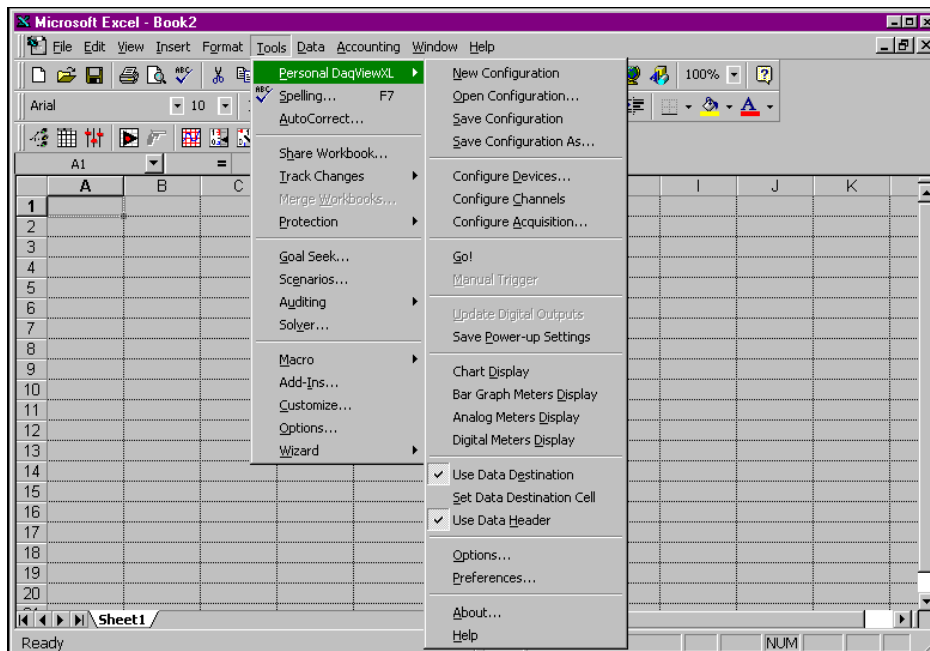
Microsoft Excel Spreadsheet showing Personal DaqViewXL Menu Options

Configuration Reference

The following information is intended to serve as a quick reference regarding channel configuration. You should refer to the user's manual for more detailed information regarding *Personal DaqView*, as needed.

Toolbar Buttons

Note: The functions that can be obtained through the toolbar can also be obtained through the pull-down menus.


Personal DaqViewXL Toolbar

|	Button	Function
1	Configure Devices	Opens the *Select Active Devices* window.
2	Configure Channels	Opens the *Channel Configuration Spreadsheet*. If the window is already open, pressing this button gives the window focus.
3	Configure Acquisition	Opens the *Configure Acquisition Dialog*. Various acquisition parameters can be set from this dialog.
4	Go!	Starts an acquisition and inserts the data into the current spreadsheet destination cell. Pressing the button again stops the acquisition.
5	Manual Trigger	Manually triggers the acquisition when applicable.
6	Chart Display	Opens the *Chart Display*, where data is displayed in graphical in a chart format. If *Chart Display* is already open, pressing this button gives the window focus.
7	Bar Graph Meters Display	Opens the *Bar Graph Meters*, where data is displayed in a bar graph format. If *Bar Graph Meters* is already open, pressing this button gives the window focus.
8	Analog Meters Display	Opens the *Analog Meters Display*, where data is displayed in an analog meter format. If *Analog Meters Display* is already open, pressing this button gives the window focus.
9	Digital Meters Display	Opens the *Digital Meters Display*, where data is displayed in a digital meter format. If *Digital Meters* is already open, pressing this button gives the window focus.
10	Use Data Destination	Turns the *Use Data Destination* feature on or off.
11	Set Data Destination Cell	Sets the *data destination cell* to the "active" cell in the current workbook.
12	Use Data Header	Turns the *Use Data Header* feature on or off.

Tools Pull-Down Menu

When the *Personal DaqViewXL* add-in is loaded, a *Personal DaqViewXL* menu is added to *Excel's Tools* pull-down menu. You can use the menu items to perform all actions that are available from *Personal DaqViewXL's* toolbar. Note that some of the pull-down items have no toolbar equivalent.

	Menu Item	Function
1	New Configuration	Provides a means of creating a new configuration from default settings.
2	Open Configuration…	Provides a means of opening an existing configuration file. This feature may be used to open configuration files created by the *Personal DaqView* application.
3	Save Configuration	Saves the configuration file under its existing filename. Note that you can open *Personal DaqViewXL* files from the *Personal DaqView* application.
4	Save Configuration As…	Copies the current file for saving under a different filename.
5	Configure Devices…	Opens the *Select Active Devices* window.
6	Configure Channels	Opens the *Channel Configuration Spreadsheet*. If the window is already open, pressing this button gives the window focus.
7	Configure Acquisition…	Opens the *Configure Acquisition Dialog*. Various acquisition parameters can be set from this dialog.
8	Go!	Starts an acquisition and inserts the data into the current spreadsheet destination cell. Selecting the item again stops the acquisition.

9	Manual Trigger	Manually triggers the acquisition when applicable.
10	Update Digital Outputs	Updates the digital output channels. This item is only enabled when the digital output channels are not updated and the acquisition state is idle.
11	Save Power-up Settings	Saves the current power-up settings for all devices in the configuration. The power-up settings take effect when the device is first plugged into an active USB port.
12	Chart Display	Opens the *Chart Display*, where data is displayed in graphical in a chart format. If *Chart Display* is already open, selecting this item gives the window focus.
13	Bar Graph Meters Display	Opens the *Bar Graph Meters*, where data is displayed in a bar graph format. If *Bar Graph Meters* is already open, selecting this item gives the window focus.
14	Analog Meters Display	Opens the *Analog Meters Display*, where data is displayed in an analog meter format. If *Analog Meters Display* is already open, selecting this item gives the window focus.
15	Digital Meters Display	Opens the *Digital Meters Display*, where data is displayed in a digital meter format. If *Digital Meters* is already open, selecting this item gives the window focus.
16	Use Data Destination	Turns the *Use Data Destination* feature on or off.
17	Set Data Destination Cell	Sets the *data destination cell* to the "active" cell in the current workbook.
18	Use Data Header	Turns the *Use Data Header* feature on or off.
19	Options…	Opens *Personal DaqViewXL's Options* Dialog.
20	Preferences…	Opens *Personal DaqViewXL's Preferences* Dialog. From this dialog box you can use the **General** and **Measurement Units** dialog boxes as described below.
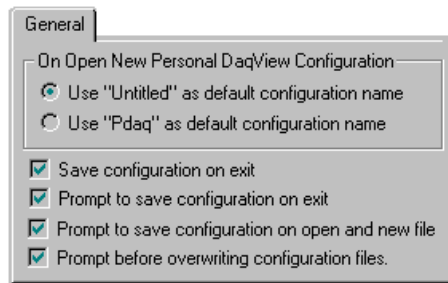
General – Allows you to select "untitled" or "pDaq" configurations for the default filename used by Personal Daq. Note that *Personal DaqView* automatically loads the last saved configuration file. The lower portion of the General screen pertains to configuration file settings.
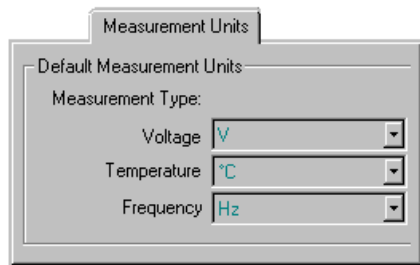
Measurement Units – Allows you to set the desired default units for the *Channel Configuration Window's* spreadsheet. Note that scale and offset automatically reset to a pre-designated default according to the unit selected.

Changing the *measurement unit defaults* does not immediately affect the *Channel Configuration Window's* spreadsheet columns. For example: If you set your voltage default to **μV**, but the channels are set with **V** units, they will retain the **V** units. However, changing these channels to temperature, then back to voltage would result in the default units (**μV**) and the associated scale & offset. The new default units are also applied to all channels when a new configuration file is created.

Preferences Screen Captures (Condensed Images)

21	About…	Provides version information for the active *Personal DaqViewXL* add-in and the *Personal DaqView* application.
22	Help…	Launches the *Personal DaqViewXL* section of the *Personal DaqView* help file.

Channel Configuration Window

You can bring up the *Channel Configuration Window* by using the *Configure Channel Settings* button (9) on the *Main Control Window* toolbar, or by selecting *Configure Channels* from the *Personal DaqViewXL* pull-down menu.

The *Channel Configuration Window* contains a **Control** pull-down menu and a 2-button toolbar. The window displays any one of three tabbed spreadsheets for selecting the type of channel to be configured. The tabs are labeled Analog Input, Frequency/Pulse Input, and Digital Input/Output.
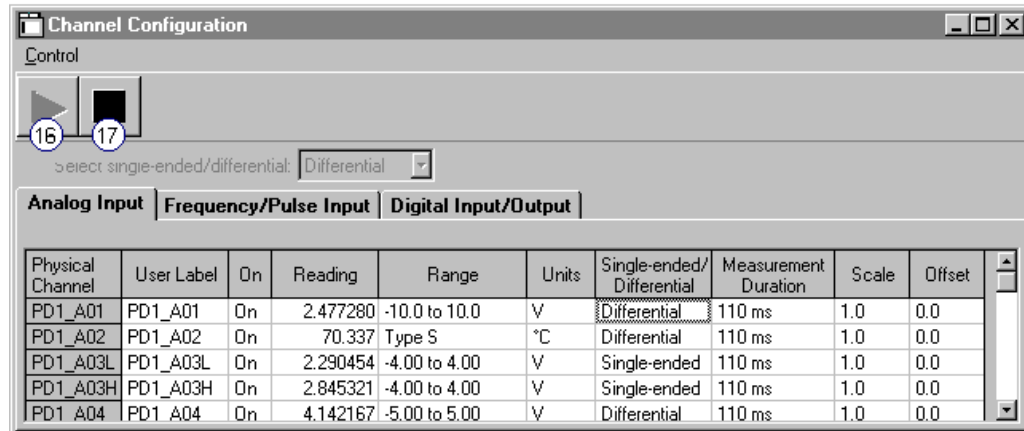
Channel Configuration Window, Selected for Analog Input Spreadsheet

Toolbar

The *Channel Configuration Window* consists of two buttons (items 16 and 17) as identified by the previous figure and the following table.

	Button	Function
16	Enable Readings Column	Activates the *Channel Configuration Window's* reading column. Does not affect the recording of data to the destination spreadsheet.
17	Disable Readings Column	Stops the *Channel Configuration Window's* reading column. Does not affect the recording of data to the destination spreadsheet.

Channel Configuration Window Pull-down Menu

The channel configuration window contains one pull-down menu labeled, **Control**. This menu provides a means of enabling and disabling the *readings* column, as do toolbar items (16 and 17).

Auto-Load Function

Excel's "Add-Ins" dialog box has a check-box for enabling (✓) or disabling an automatic loading of *Personal DaqViewXL* each time you run *Excel*. To enable or disable the auto-load feature, refer to the following two paragraphs as needed.

Disabling Auto-Load

If you want to avoid an automatic loading of *Personal DaqViewXL* each time you run *Excel*, perform the following steps:

1. Start *Excel*.
2. Select the "Tools" menu and click on "Add-Ins." The "Add-Ins" dialog box opens.
3. Locate the *Personal DaqViewXL* line in the "Add-Ins Available" list box and click on it. This should remove the checkmark next to the item.
4. Click "**OK**."

Personal DaqViewXL will no longer auto-load with *Excel*. See the following paragraph for simple steps on enabling the *Personal DaqViewXL* auto-load feature.

Enabling Auto-Load

If you want *Personal DaqViewXL* to automatically load each time you run *Excel*, perform the following steps:

1. Start *Excel*.
2. Select the "Tools" menu and click on "Add-Ins." The "Add-Ins" dialog box opens.
3. Locate the *Personal DaqViewXL* line in the "Add-Ins Available" list box and click on it. This should insert a checkmark (✓) next to the item.
4. Click "**OK**."

Personal DaqViewXL will now auto-load with *Excel*. See the previous paragraph for simple steps on disabling the *Personal DaqViewXL* auto-load feature.

Performance of Personal DaqViewXL

Personal DaqViewXL performs in much the same manner as the standard *Personal DaqView*, with the noted difference that the *XL* version can use *Excel* macros. The following sections provide basic information for using *Personal DaqViewXL* to organize and analyze data. An understanding of these basics will let you explore each of *Personal DaqViewXL's* many features.

Note: The *Hints and Tips* section contains suggestions for improving your productivity with *Personal DaqViewXL*. If you are not proficient with *Excel*, please refer to your *Excel* documentation as needed. The more you know about *Excel*, the better your understanding and use of *Personal DaqViewXL* will be.
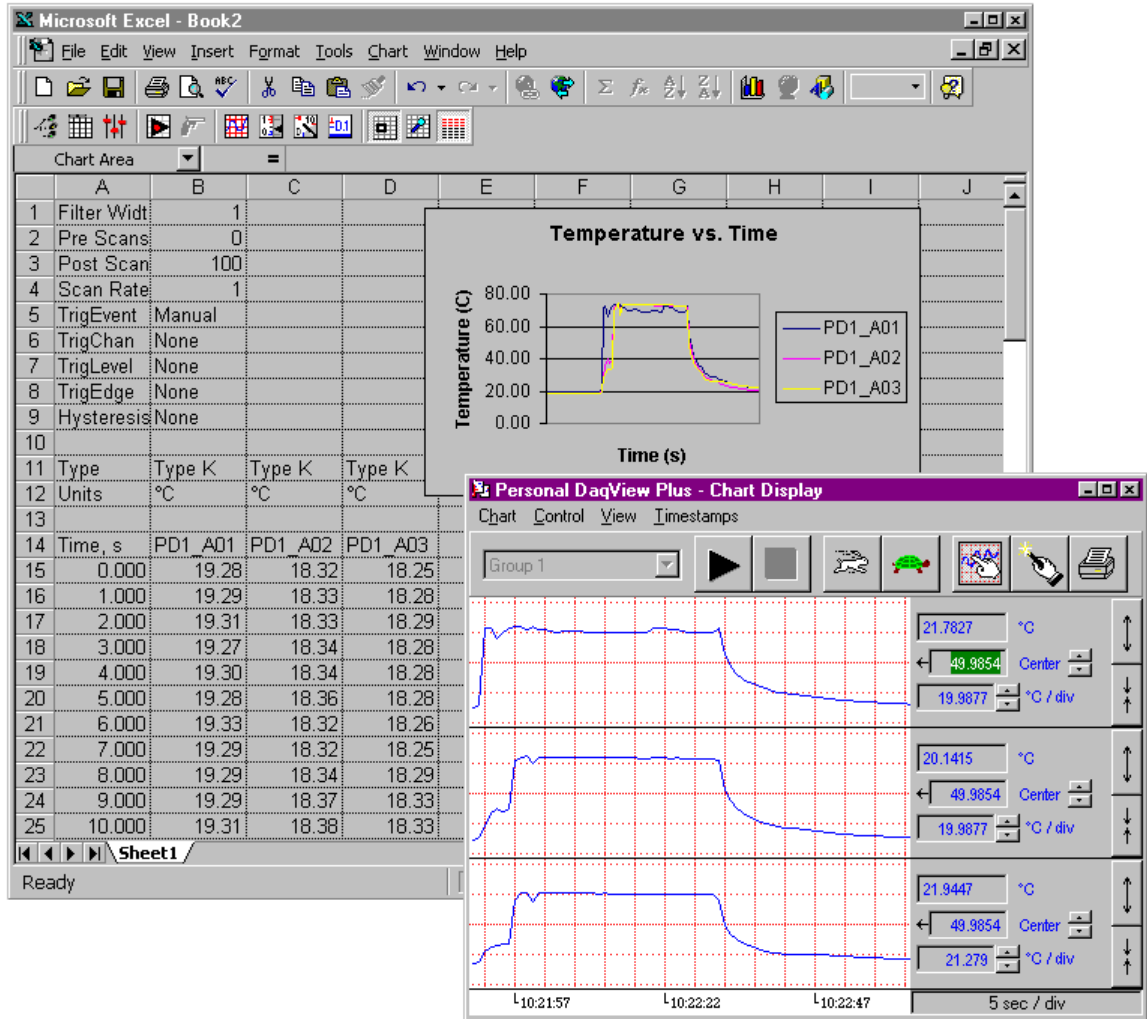
Personal DaqViewXL Spreadsheet with Toolbar and Displays
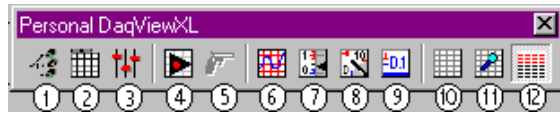
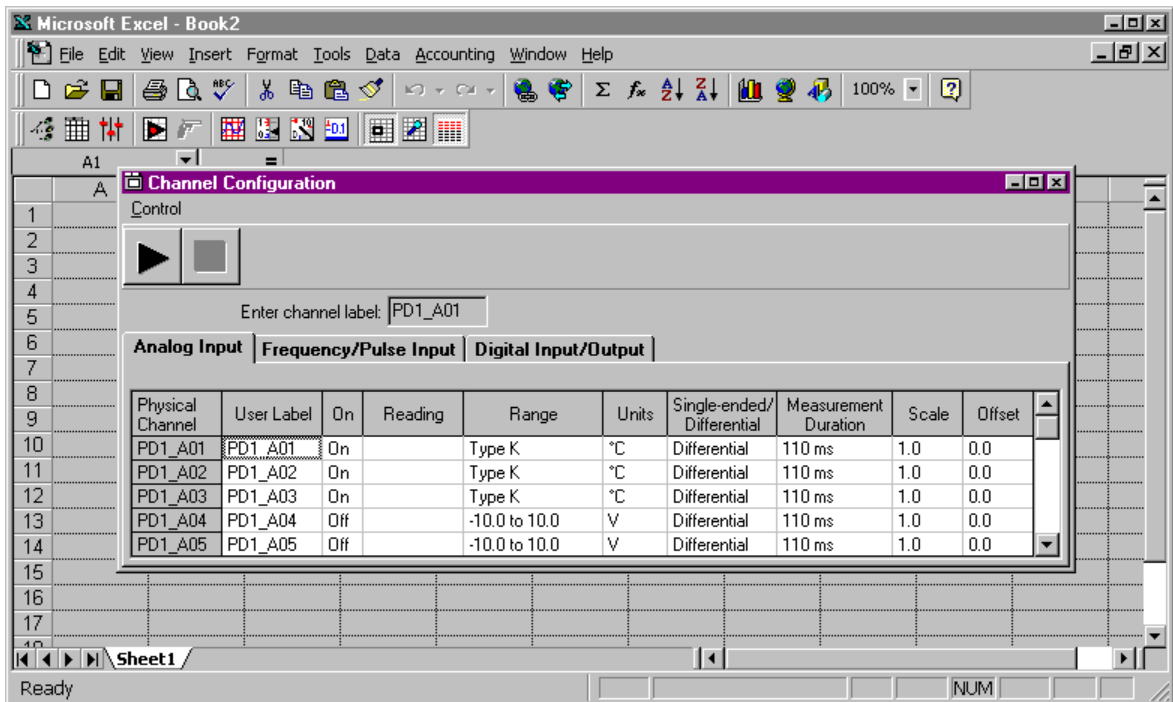*Personal DaqViewXL Toolbar*

(1) Configure Devices
(2) Configure Channels
(3) Configure Acquisition
(4) Go!
(5) Manual Trigger
(6) Chart Display
(7) Bar Graph Meters
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(11) Set Data Destination Cell
(12) Use Data Header

Configuring an Acquisition

To set up your configuration, once *Personal DaqViewXL* has been installed; complete the following steps:

1. Enter *Excel.*

Personal DaqView Channel Configuration Screen within Excel

2. Configure acquisition settings using the ***Configure Devices, Configure Channels,*** and ***Configure Acquisition*** toolbar buttons or tool pull-down menu selections.

These steps launch *Personal DaqView's* configuration screens. Note that the *Personal DaqView* configuration information, found in the Personal Daq User's Manual, still applies to *Personal DaqViewXL.* Also see the section in this user's guide, *Configuration Reference,* beginning on page 5.

Real-Time Charting

Personal DaqViewXL provides a real-time strip-chart window (as in *Personal DaqView*) for graphical presentation of data. You can select up to 16 channels of data, with one channel assigned to each graph. The strip-chart representation is continuous while data is being collected. All 16 charts are synchronized and have an adjustable scrolling speed that can be set independent of the sampling rate. Selecting the *Charts* icon in the *Personal DaqViewXL* toolbar will activate the following window. The chart selection must be made prior to initiating an acquisition (selecting the *Go!* icon).
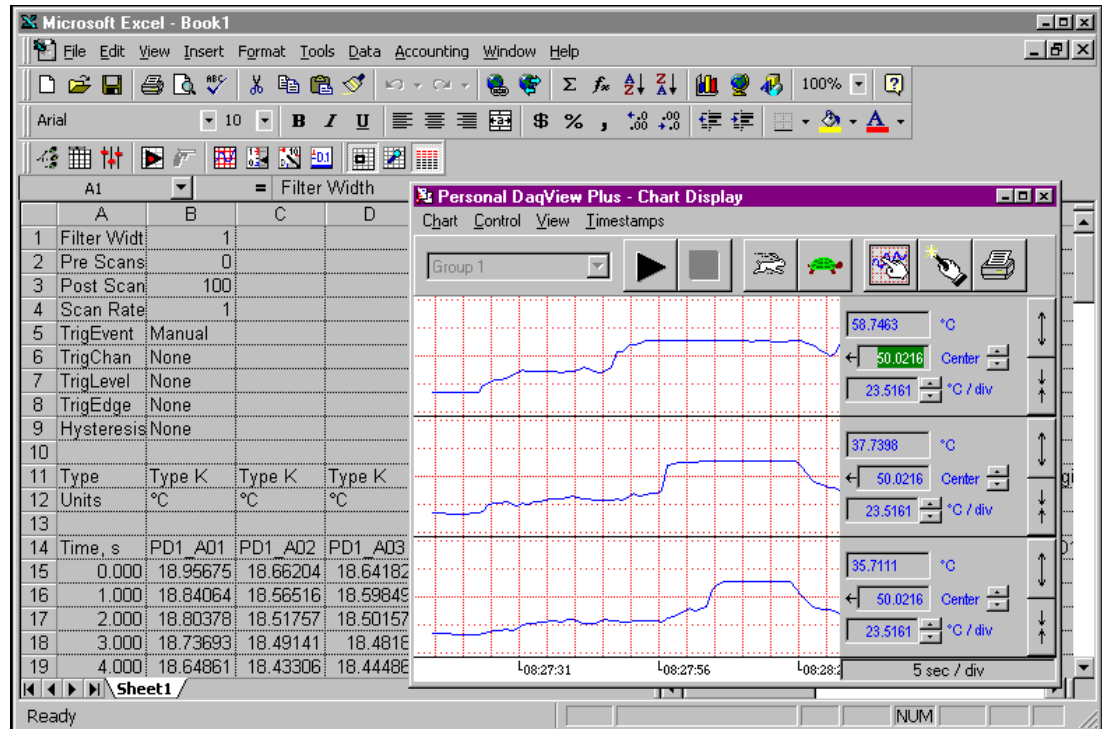
Personal DaqViewXL Real-Time Charting

Data Header

Personal DaqViewXL's optional data header supplies the global acquisition parameters and the configuration of each channel and places this information directly in the spreadsheet along with acquired data. Examples of frequently used header information include: channel gain, thermocouple type, units, and channel label. To activate Data Headers select the *Use Data Headers* icon in the *Personal DaqViewXL* toolbar.

	A	B	C	D	E	F	G	H	
1	Filter Width	1							
2	Pre Scans	5							
3	Post Scans	50							
4	Scan Rate	1							
5	TrigEvent	Manual							
6	TrigChan	None							
7	TrigLevel	None							
8	TrigEdge	None							
9	Hysteresis	None							
10									
11	Type	Type K	Type K	Type K	-10.0 to 10.0	Frequency	Frequency	Digital Bit	Di
12	Units	°C	°C	°C	V	Hz	Hz		
13									
14	Time, s	PD1_A01	PD1_A02	PD1_A03	PD1_A04	PD1_F1	PD1_F2	PD1_D01	PD
15	-5.000	23.01	23.03	23.14	0.0005	0	0	1	
16	-4.000	23.01	23.03	23.14	0.0005	0	0	1	
17	-3.000	23.01	23.03	23.14	0.0005	0	0	1	
18	-2.000	23.01	23.03	23.14	0.0005	0	0	1	
19	-1.000	23.01	23.03	23.14	0.0005	0	0	1	
20	0.000	22.97	23.01	23.08	0.0005	0	0	1	
21	1.000	22.94	23.01	23.11	0.0005	0	0	1	
22	2.000	22.96	23.02	23.09	0.0005	0	0	1	
23	3.000	22.97	22.99	23.07	0.0005	0	0	1	
24	4.000	22.94	23.01	23.08	0.0005	0	0	1	
25	5.000	22.96	22.98	23.08	0.0005	0	0	1	

Personal DaqViewXL Data Header

Hints and Tips

- If *Personal DaqView* is running as a stand-alone application when you start to use *Personal DaqViewXL*, *Personal DaqView* will switch to a special "server mode." This "server mode" supports transactions with "client" applications such as *Excel*. Note that you must close *Excel* prior to using *Personal DaqView* again as a stand-alone application.

- When you acquire data into a worksheet, some of the data may be displayed as a string of pound characters (######). *Excel* will use these characters when a column is not wide enough to display all the digits of a given number. Sufficient widening of the column will eliminate the symbols. You can widen columns using the "Format, Column, Auto Fit Selection" menu command. Clicking on this menu-item automatically adjusts column widths to accommodate the data.

- *Personal DaqViewXL* does not have to be used as an *Excel* "Add-In;" it can also be loaded as a workbook. To do so, open **pDaqView.xla** using the *File Open* dialog box. The *Personal DaqViewXL* toolbar and menu items will be added to *Excel*.

- When loading the *Personal DaqViewXL* add-in manually, *Excel* does not automatically create a blank workbook. To create a workbook, access the *File, New* menu item (after *Excel* loads with *Personal DaqViewXL*).

  Note: *When you load Personal DaqViewXL as a workbook, it will not automatically load the next time you run Excel. However, it will appear in the recently used list at the bottom of the File menu, making it easy to load the next time you run Excel.*

- You can arm an acquisition from an *Excel* macro as shown in the following VBA code example:

```
Sub GoMacro()
        Dim cbpMenu As CommandBarPopup
        Dim cbButton As CommandBarButton

        'Get the Personal DaqViewXL menu object.
        Set cbpMenu = CommandBars("Tools").Controls("Personal DaqViewXL")
        'Get the "Go!" command button object.
        Set cbButton = cbpMenu.Controls(8)
        'Execute the button's command if the button is enabled.
        If cbButton.Enabled Then cbButton.Execute
End Sub
```

  This is equivalent to clicking "Go!" on the *Personal DaqViewXL* menu or toolbar. Any of the other commands on the *Personal DaqViewXL* menu may be executed in a similar manner.

- If *Personal DaqView* cannot connect to your hardware on start-up, it will automatically switch to the Simulated Instrument mode when loaded from *Personal DaqViewXL*.

Notes

Notes