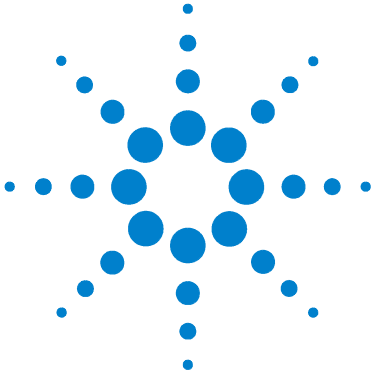

Agilent 34826A
BenchLink Data Logger for 34980A

Getting Started Guide

Agilent Technologies

Notices

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Edition

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Software Revision

This guide is valid for 1.x.x revisions of the Agilent 34826A *BenchLink Data Logger for 34980A* software, where x.x refers to minor revisions of the software that do not affect the technical accuracy of this guide.

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CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Information

Do not defeat power cord safety ground feature. Plug in to a grounded (earthed) outlet.

Do not use product in any manner not specified by the manufacturer.

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure that safety features are maintained.

Safety Symbols

Earth Ground

Chassis Ground

Risk of electric shock

Refer to manual for additional safety information

WARNING

Main Power and Test Input Disconnect: Unplug instrument from wall outlet, remove power cord, and remove all external wiring before servicing. Only qualified, service-trained personnel should remove the cover from the instrument.

WARNING

Line Fuse: For continued protection against fire, replace the line fuse only with a fuse of the specified type and rating.

Welcome to the Agilent *BenchLink Data Logger for 34980A*

The Agilent *BenchLink Data Logger for 34980A* software provides a convenient way to collect and analyze your data. The software uses a familiar spreadsheet environment, streamlining your data gathering needs. Simply identify the measurements you want to acquire, initiate the process, and see the data displayed on the computer screen. Use one of the many options to analyze and display your data—strip charts, histograms with statistical analysis, bar and scatter charts, individual channel results, and more.

Data Logger for 34980A Features

Superior Usability

- Tab-based user interface, simple menu structure.

Data Manager

- Manages all configurations and datalogs.
- Simplifies opening, renaming, deleting and editing.
- Easy access to data export.
- All configurations and datalogs are automatically saved—your data is protected!
- Last configuration can be opened upon application start-up.

Export Data

- Complete control of the decimal character and field separator.
- Complete control of the export contents.
- Automatically split files greater than 65536 lines or 256 columns (for easy importing into Microsoft Excel).
- Export to clipboard.
- Export configurations.

Auto Export Data

- Automatically export data with pre-configured preferences during the scan.

Graphing

- All graph configurations are saved and restored automatically the next time *Data Logger for 34980A* is opened.
- Add/remove channels.
- Graph preferences allow easy control of graph look and feel.
- Popup windows for data, alarms, bar charts and markers.
- Automatically generate a graph for each 34980A.
- Add additional graphs for the same datalog.
- Split a graph to allow easy viewing of independent measurements.
- Editable Y Scale and Y Zero Reference.
- Full screen mode.
- Control the color of high and low alarms.

Import Module

- Import a module's scan configuration from one configuration to another.

Configure 34980As

- Up to two 34980As scanning simultaneously.
- Download only the configured channels—saves you time!

Globalization

- Uses the operating system settings for decimal and field separators.
- Available in all data entry fields and in export data.

Multiple Languages

- Application and all online help localized for French, German, Simplified Chinese, Korean and English.
- Uses the operating system language settings for supported languages.
- Language changes happen immediately. The operating system can be one language and the product another language.

Important: Read the safety, warning and caution information in the 34980A User's Guide before operating or connecting wiring to the 34980A and its modules. Module wiring information is located in the 34980A User's Guide.

1 Getting Started with *Data Logger for 34980A*

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NOTE

This tutorial assumes you have installed at least one 34980A, connected it via interface to your PC, and verified PC to 34980A communication. For 34980A installation information, refer to the *Agilent 34980A Getting Started Guide*.

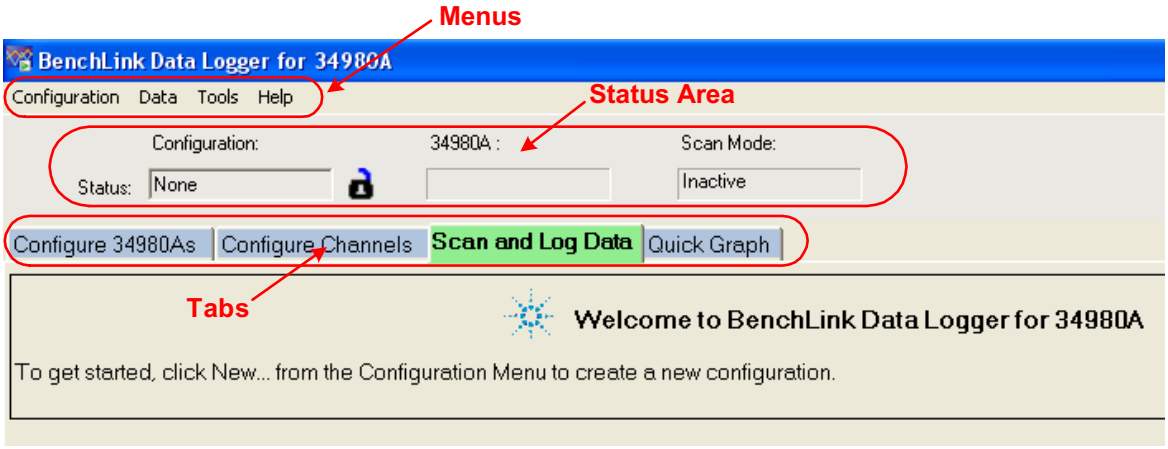
If you have not done so, you can use the *Agilent Connection Expert* to automatically configure interfaces and check 34980A communications. This utility is on the *Automation-Ready CD ROM* included with the 34980A.

Getting Started Tutorial

This getting started tutorial introduces you to the *Data Logger for 34980A* and shows you how to:

- Connect to one or more 34980As
- Set up a simple channel configuration
- Scan channels and measure some data
- View the data in graphical form
- Export the data to a Microsoft Excel-compatible spreadsheet
- Save the configuration

Before starting the tutorial, you should become familiar with the *Data Logger for 34980A* user interface. The graphic below shows the menus, status area and tabs in the user interface.



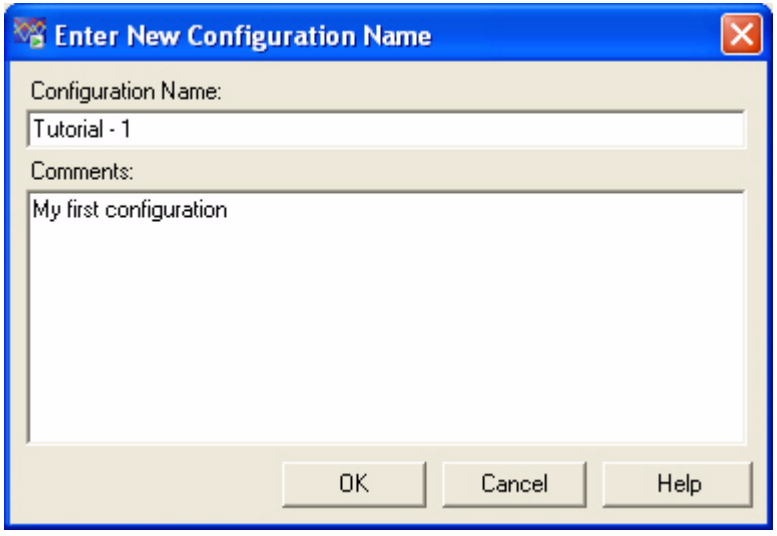
Step 1. Create a New Configuration

In this step we will create a new configuration.

NOTE

For purposes of example, this tutorial assumes you have a 34921A, 34922A, 34923A, 34924A, or 34925A multiplexer module installed in a 34980A. Although you can use up to two 34980As in a configuration, this tutorial uses only one 34980A. You should not have any channels connected to external equipment or signal sources for this tutorial.

1. Click the *Data Logger for 34980A* icon on your desktop to open the application.
2. Click **Configuration > New...** to create a new configuration.
3. You will be prompted to enter a new configuration name and comments. For this tutorial, enter the information shown below and click **OK**.



The configuration name appears under **Configuration:** in the status area of the application window. For example:

NOTE Notice the unlocked padlock icon to the right of the configuration name. This indicates the configuration does not yet have a datalog and is editable. Once a scan has occurred and a datalog exists for the configuration, the padlock will be shown as locked. To alter a locked configuration, you must either delete the associated datalog(s) or copy and rename the configuration.

Step 2. Configure 34980s

In this step you will identify which 34980A(s) to use in the configuration.

Data Logger for 34980A can be used in either of these two modes:

- **Connected to 34980A (Connected Mode)**
- **Not connected to 34980A (Not Connected Mode)**

NOTE This tutorial uses the **Connected Mode** and assumes your PC is connected via interface to at least one 34980A and communication has been established. If you have not done so, you can use the Agilent Connection Expert to automatically configure interfaces and check 34980A communications. This utility is on the Automation-Ready CD ROM included with the 34980A.

1 On the **Configure 34980As** tab, click **Connected to 34980A**. Notice on the **Configure 34980As** tab, the configuration steps (1 through 4) are shown in bold lettering from left to right.

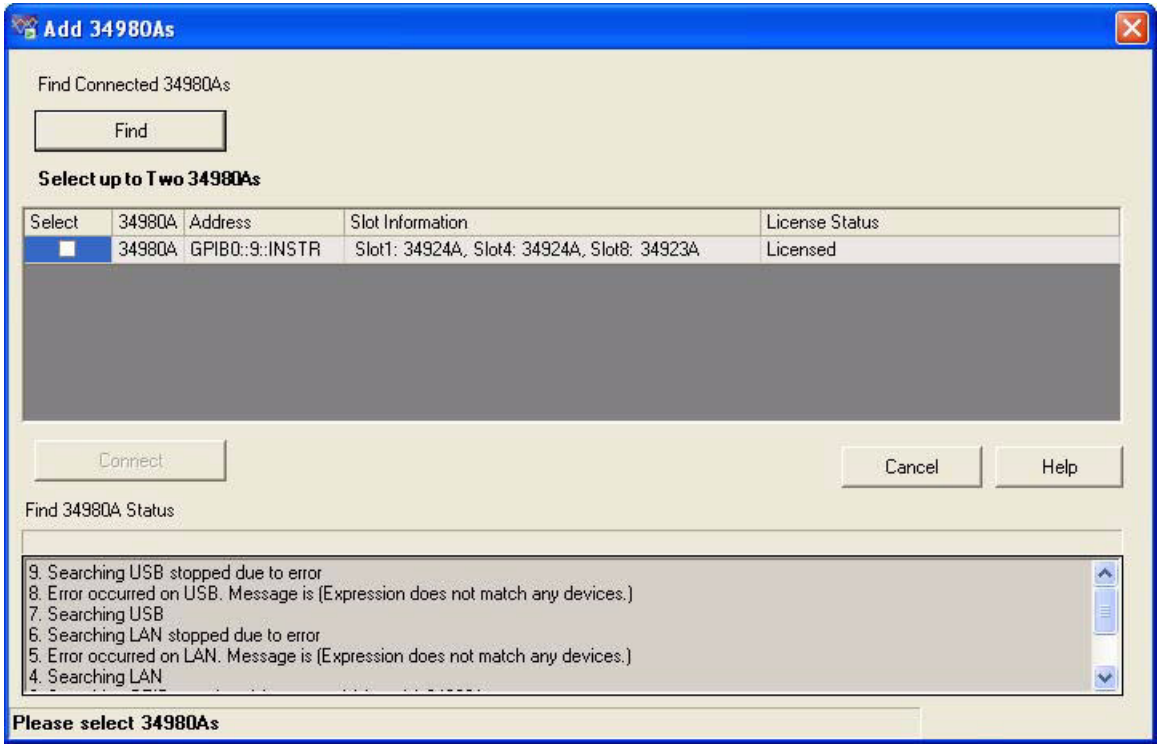
NOTE You can access the help for the selected tab by clicking the F1 key.

2 Click the **Add 34980s...** button.

3 Make sure the 34980s to be added are powered-on and connected to the PC via an interface. In the **Add 34980s** dialog box, click the **Find** button.

NOTE The Find button will find only 34980As. It is not a general discovery tool for all devices on the interface.

4 You should now see a listing of the 34980As found. For example:



The **Find 34980A Status** area shows the status of the find operation. If you do not see any 34980As listed, check that the interface is connected and the 34980A is powered-on. For more information on troubleshooting configuration problems, refer to the Agilent Connection Expert application on the Automation-Ready CD ROM included with the 34980A.

Notice the **License Status** column. This column displays the licensing status of the connected 34980A(s):

- If **Licensed** is displayed, the 34980A is properly licensed. You can continue with this tutorial.
- If **Not Licensed, *N* Evaluations Remain** is displayed, the 34980A is not licensed but still has some evaluation runs left. You can continue this tutorial in evaluation mode. If you want to install license(s) now, click **Tools > Licensing > Licensing Checklist** and follow the instructions.
- If **Not Licensed, 0 Evaluations Remain** is displayed, you need to license the 34980A. Click **Tools > Licensing > Licensing Checklist** and follow the instructions. Once licensed, you can continue this tutorial.
- If **Instrument Firmware Update Required** is displayed, the 34980A has outdated firmware. Click **Tools > Licensing > Licensing Checklist** and follow the instructions. Once the firmware is updated, you can continue this tutorial.

5 In the column labeled **Select**, click the box next to the 34980A(s) you want to add. You can add up to two 34980As in a single configuration.

6 Click the **Connect** button. This reads the configuration of the 34980A(s) and populates the **Configure 34980As** tab with the 34980A number, address and modules found in the 34980A.

7 Double-click **Instr1** in the **Name** column. Add a more descriptive name for this 34980A. For this example, highlight **Instr1** and enter the name *Test Station 1*.

NOTE It is best to rename the 34980A before starting a scan. Once scan data (datalog) exists, the **Name** field becomes locked.

8 Notice the **Module Mode** column. For modules that *can* be included in a scan (multiplexer and multifunction modules), this mode will be set to **Scan Mode**. Other modules that *cannot* be included in a scan are set to **Inactive Mode**.

Typically, for multiplexer and multifunction modules, you should leave the **Module Mode** set to **Scan Mode**. If you want to change the **Module Mode**, click in the field next to the right of the text and a drop down list will be available. You may choose **Inactive Mode** if you are not interested in scanning on a given module.

NOTE Additional modules are supported in **Switch Mode**. Refer to *Module Mode*, in the online help, for details.

9 Notice the button in the **Properties** column. This button opens the **34980A Properties** dialog box which allows you to configure the 34980A, including changing the wiring mode (1-wire or 2-wire) of the 34923A and 34925A modules.

Step 3. Configure Channels

In this step you will add channels and measurement functions to a scan list.

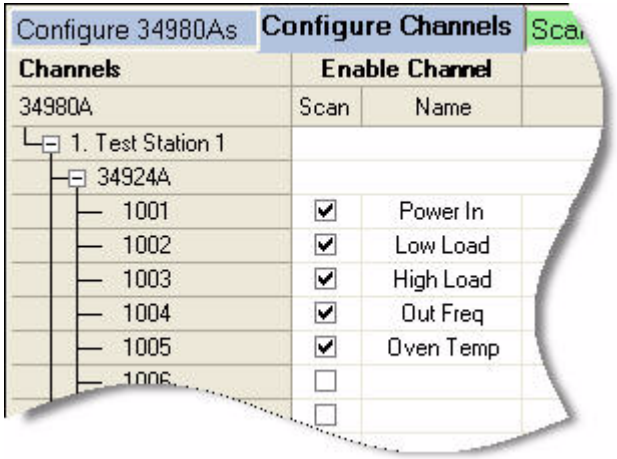
1 Click the **Configure Channels** tab.

NOTE Whenever you move from tab to tab or close the application, the configuration information is automatically saved.

2 The 34980A number, name and modules are shown in the tree view in the column labeled **Channels** on the left side of the grid. You can collapse the tree view by clicking ⊟ next to a 34980A or module. Click ⊞ to expand a collapsed tree view.

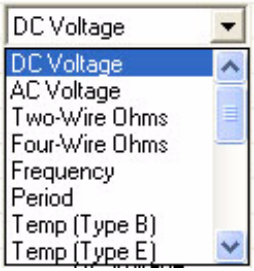
3 The **Enable Channel** column allows you to select channels to be in the scan and, optionally, name each channel. To select a channel, click the checkbox in the **Scan** column under the **Enable Channel** column. For this tutorial, click the check boxes next to channels 1001, 1002, 1003, 1004 and 1005.

4 In the **Name** column, enter these names for the five selected channels: *Power In, Low Load, High Load, Out Freq, Oven Temp*.

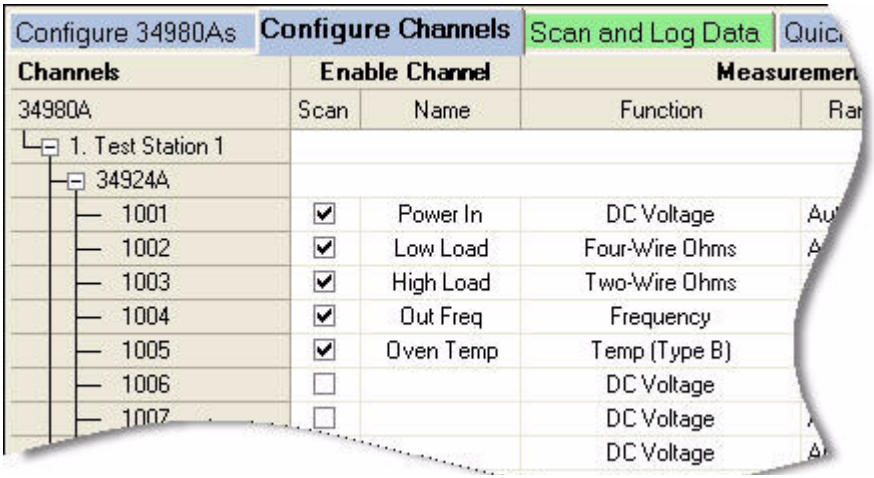


5 The **Measurement** column allows you to select the measurement function, the range, the resolution, and set advanced measurement properties for each selected channel. The default measurement function for scanned channels is DC Voltage. To change the measurement function, click on the word **DC Voltage** in the **Measurement Function** column.

Click the down arrow to see the available measurement functions:



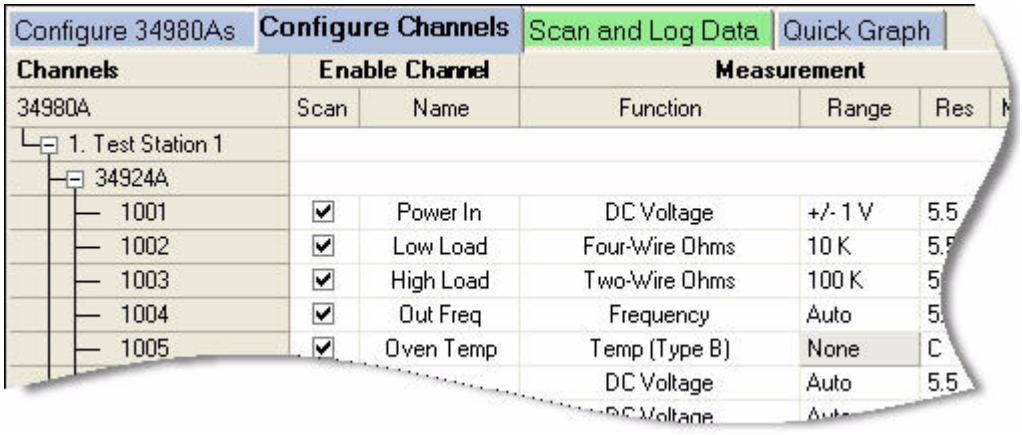
For this tutorial, set the measurement functions in sequence to **DC Voltage, Four-Wire Ohms, Two-Wire Ohms, Frequency** and **Temp (Type B)**.



NOTE If your 34923A or 34925A multiplexer module is set to 1-wire mode, the four-wire ohms function is not available. In this situation, set channel 1002 to 2-wire ohms.

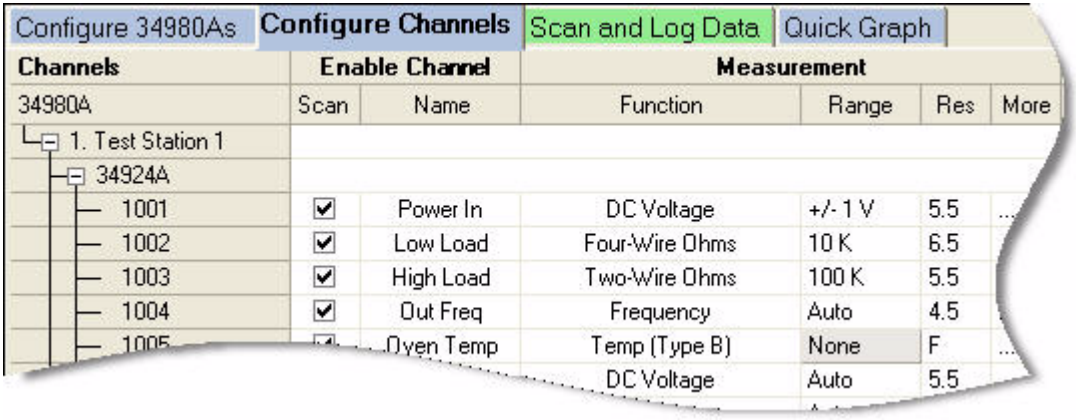
NOTE Notice that for 4-wire ohms, a paired channel (channel n+20 for 40-channel multiplexers or channel n+35 for 70-channel multiplexers) is automatically configured for the sense lines.

6 The **Range** column allows you to specify a fixed range or Autorange (the default). To change the range, click the word **Auto** in the **Range** column. A drop down arrow appears, allowing you to select the range. For this tutorial, set the ranges in sequence to: **+/- 1V, 10K, 100K**, and **Auto**.

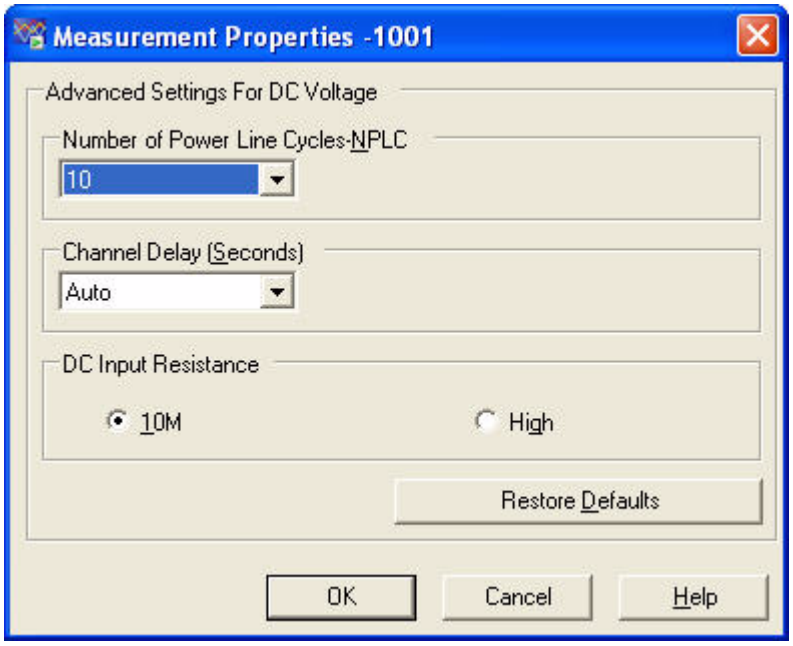


NOTE Notice the range for temperature measurements is fixed and displayed as **None**.

7 The **Res** column allows you to set the measurement resolution for most measurement functions and the temperature scale (C, K, or F) for temperature measurements. To change the resolution, click the number **5.5** in the **Res** column. A drop down arrow appears, allowing you to select the resolution. For this tutorial, set the resolutions in sequence to: **5.5**, **6.5**, **5.5**, **4.5** and **F**.



8 The **More** column under **Measurement** allows you to select advanced settings for the measurement function. For example, for the DC Voltage function, you can set Number of Power Line Cycles, Channel Delay and DC Input Resistance. For this tutorial, click ••• in the **More** column for channel 1001, and set the **Number of Power Line Cycles-NPLC** to **10** and click **OK**. This sets the integration time for the DMM.



Notice the resolution for channel 1001 is now 6.5 digits—not 5.5 digits. This is because integration time and measurement resolution are directly related.

9 Optionally, you can use the **Scaling (Mx + B)** column and **Alarm Limits** column to set scaling and alarms. We will not set scaling or alarms for this tutorial. Refer to the *Data Logger for 34980A* online help for more information on **Scaling (Mx + B)** or **Alarms**.

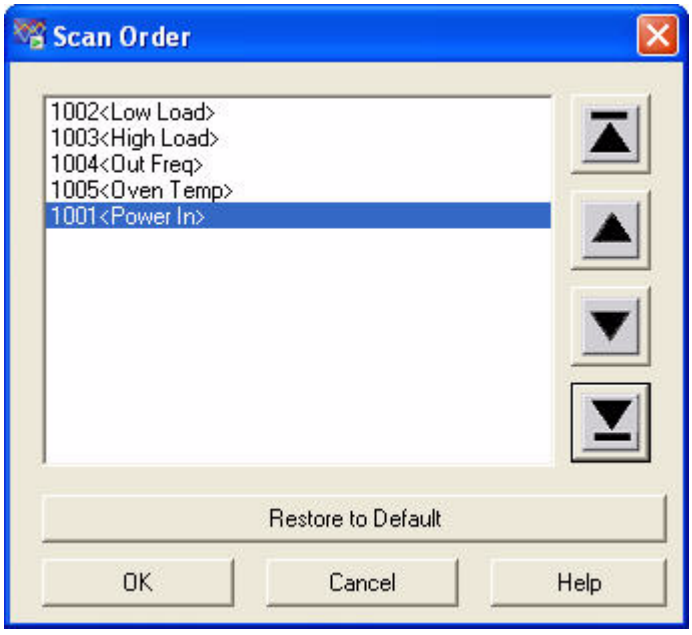
Step 4. Set Up Scan Control and Data Control

In this step we will set the scan start and stop criteria and define when to log the data.

1. Click on the **Scan and Log Data** tab—the channel configuration is automatically saved. The **Scan and Log Data** tab contains **Scan Control, Scan Order, Data Control, Start/Stop** and **Scan Status** sections. The default settings start the scan immediately.
2. Typically, you will want to add more scan control to the scan than starting immediately. Let's set the scan to start at a specific time and stop after a number of scans.
3. Click in the **Scan Control** column. The **Scan Control** dialog box appears. In the column labeled **When Start Button Pressed, Start Scanning**, click the **At Time** button. We will use the default date and time, which is a few minutes from now based on your PC clock. In the **Stop Scanning** column, click the **After N Scans** button and enter *20* in the box below. Click **OK** to save the settings.

   Notice the scan control settings are now summarized in the **Scan Control** column.
4. Click in the **Scan Order** column. The **Scan Order** dialog box appears. You can use the buttons in the **Scan Order** dialog box to move any channel to another position in the scan list. We want channel 1001 to be scanned last

   in the scan list. Click on channel 1001 and click to move it to the bottom of the list. Click **OK**.

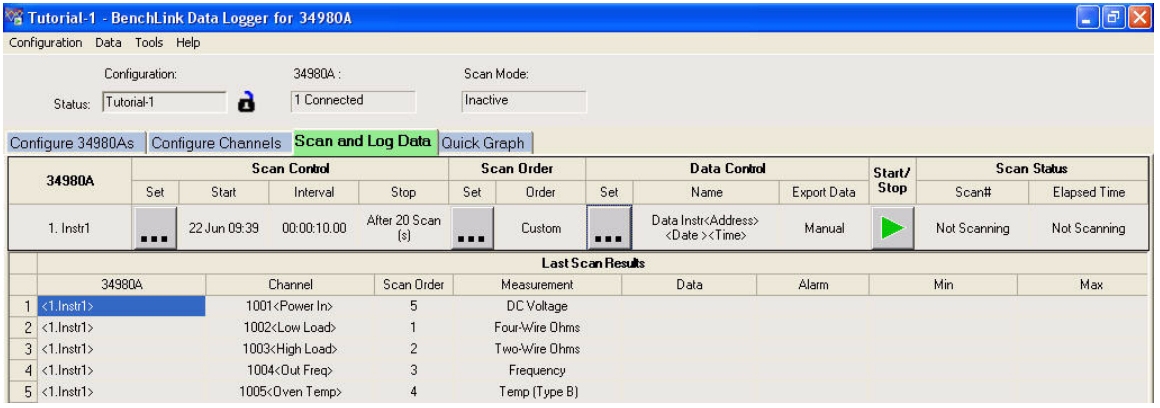


5 Click ... in the **Data Control** column. The **Set Datalog Fields** dialog box appears. From this dialog you can automatically name the datalog from the template, or uncheck the default naming and enter a name for the datalog. You can also add comments, change the owner, and choose to have the datalog automatically saved as a CSV (Comma Separated Values) file. For this tutorial, we will use the default **Name** from the template, the default **Owner**, and not automatically save the datalog. Click **Cancel** to close this dialog box.

NOTE

The template allows you to select the fields that will be included in the datalog folder name. By clicking the Edit Template button, you can enter a custom prefix (default = Data) and either have the instrument number listed or not listed. The date and time timestamp is always included in the datalog name when using the template.

6 Notice the data control settings are now summarized in the **Data Control** column.



Step 5. Start the Scan

In this step we start the scan and view the results.

1 To start the scan, click the start button under the **Start/Stop** column.

NOTE

- You may see the **Safety Interlock** message. This message informs you that one or more modules are missing terminal blocks. We are not concerned about the scanned data for this tutorial, so click **Yes** to start the scan.
- You may also see a message about licensing. To learn more about licensing, see the **Licensing Checklist** (**Tools > Licensing > Licensing Checklist**). Click **Yes** to close the message window and start the scan.
- If you took too long to get to this step, you will receive a message that the scan start time is prior to the current time. If this occurs, go back to the **Scan Control**, reset the start time, and then click the start button again.

2 Once you have started the scan, the settings you configured in **Scan Control** become enabled. For this tutorial, we set a date and time to start the scan. Our scan will start when the specified date and time occurs.

3 You will see some messages indicating the configuration is being downloaded to the 34980A.

4 Once scanning begins, the start button turns into a stop button , and a small clock icon appears on the tab label area to indicate that the scan is in progress.
The clock icon and the stop button also appear in the status area above the tabs.

5 Once the scan begins, you can view the **Last Scan Results** per channel in the grid below the control area.

6 You can view the scan status in the **Scan Status** column.

Step 6. View Data Graph

In this step we will view the scan data as a graph. Typical graph data is shown on the next page.

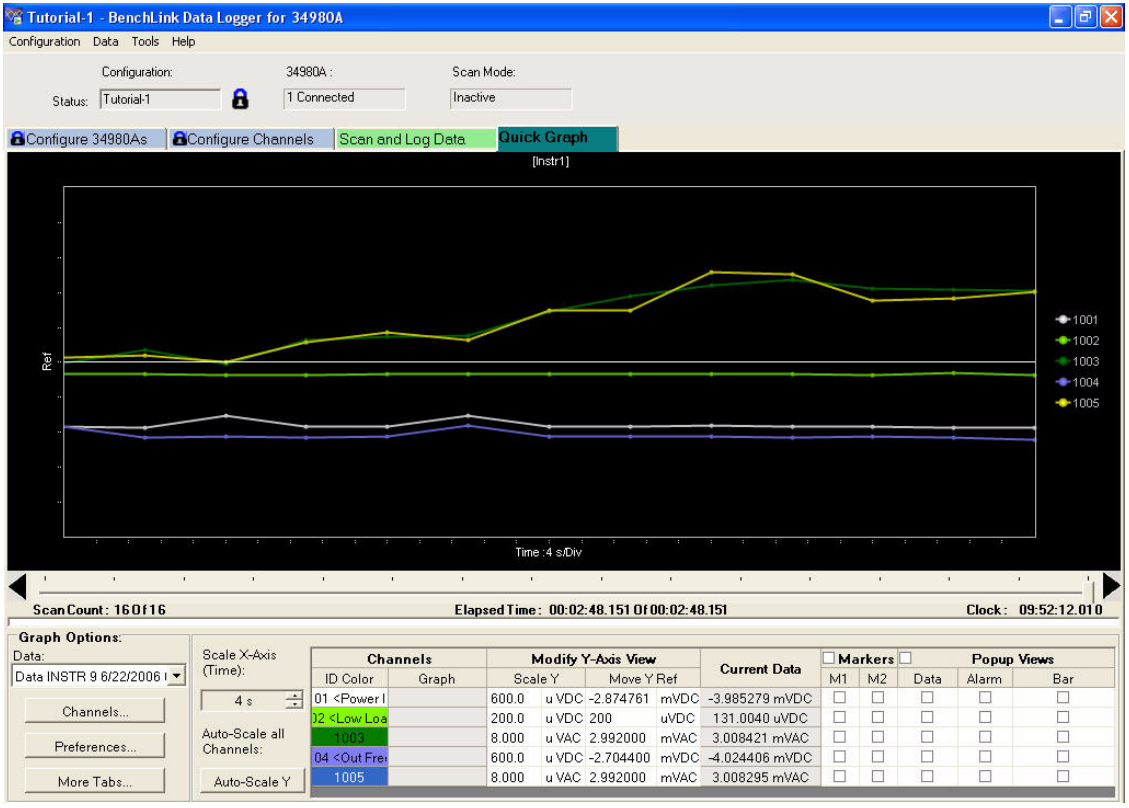
1 Click the **Quick Graph** tab.

2 After scanning begins, the data logged from the scan is displayed in the graph using the default graph setup.

NOTE There may be a slight delay from the start of the scan until you see the data in the graph.

3 Notice that each channel in the graph is a different color. Also notice the **Channels** column below the graph and the corresponding channel colors.

NOTE An overload (OVLD) is indicated by an **X** on the data point. The **X** is placed at the top (positive overload) or bottom (negative overload) of the graph.


Tutorial-1 - BenchLink Data Logger for 34980A
Configuration Data Tools Help
Configuration:
34980A :
Scan Mode:
Status: Tutorial-1
1 Connected
Inactive
Configure 34980As
Configure Channels
Scan and Log Data
Quick Graph
[Instr1]
Ref
Time :4 s/Div
1001
1002
1003
1004
1005
Scan Count : 16 Of 16
Elapsed Time : 00:02:48.151 Of 00:02:48.151
Clock : 09:52:12.010
Graph Options:
Data:
Data INSTR 9 6/22/2006 I
Channels...
Preferences...
More Tabs...
Scale X-Axis (Time):
4 s
Auto-Scale all Channels:
Auto-Scale Y
Channels
ID Color
Graph
Modify Y-Axis View
Scale Y
Move Y Ref
Current Data
Markers
M1
M2
Popup Views
Data
Alarm
Bar
01 <Power I
600.0 u VDC -2.874761 mVDC -3.985279 mVDC
02 <Low Loa
200.0 u VDC 200 uVDC 131.0040 uVDC
1003
8.000 u VAC 2.992000 mVAC 3.008421 mVAC
04 <Out Fre
600.0 u VDC -2.704400 mVDC -4.024406 mVDC
1005
8.000 u VAC 2.992000 mVAC 3.008295 mVAC

Step 7. Customize the Graph

This step shows you some of the many graphing features. You can customize the graph even while data is being logged.

NOTE If you do not see the data, you may need to adjust the x and y scales.

1. To autoscale the data to fit the graph, click on the **Autoscale Y** button. A confirmation dialog will appear. Click **OK** to autoscale all channels.
2. You can adjust individual Y scales for each channel in the area below the graph labeled **Modify Y-axis View.**
3. Adjust the time per division by using the up/down arrows under **Scale X-Axis (Time)**.
4. To select which channels to graph, click the **Channels...** button. The **Channels** dialog box will appear. By default all channels are checked. Uncheck the channels that you do not wish to display.

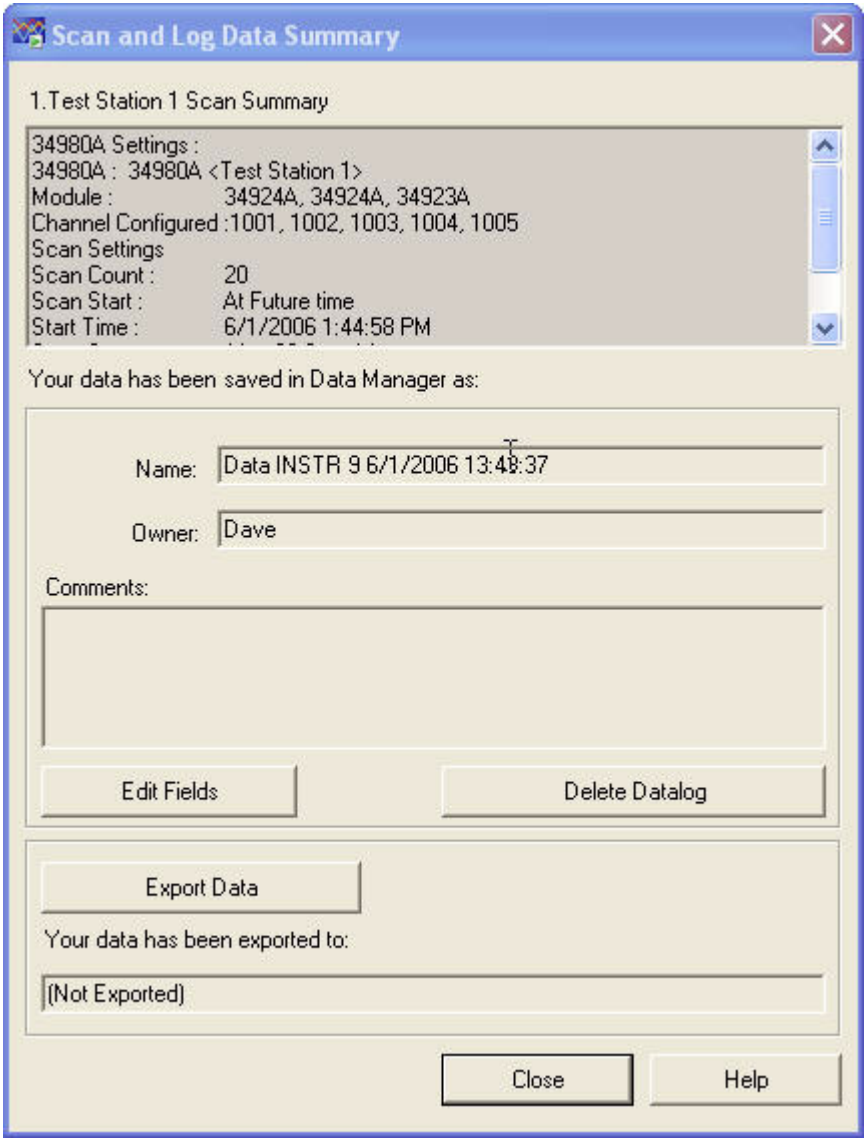
Step 8. Stop the Scan

In this step we will stop the scan.

1 To stop the scan, either wait until the 20 scans you specified finish or click the stop button

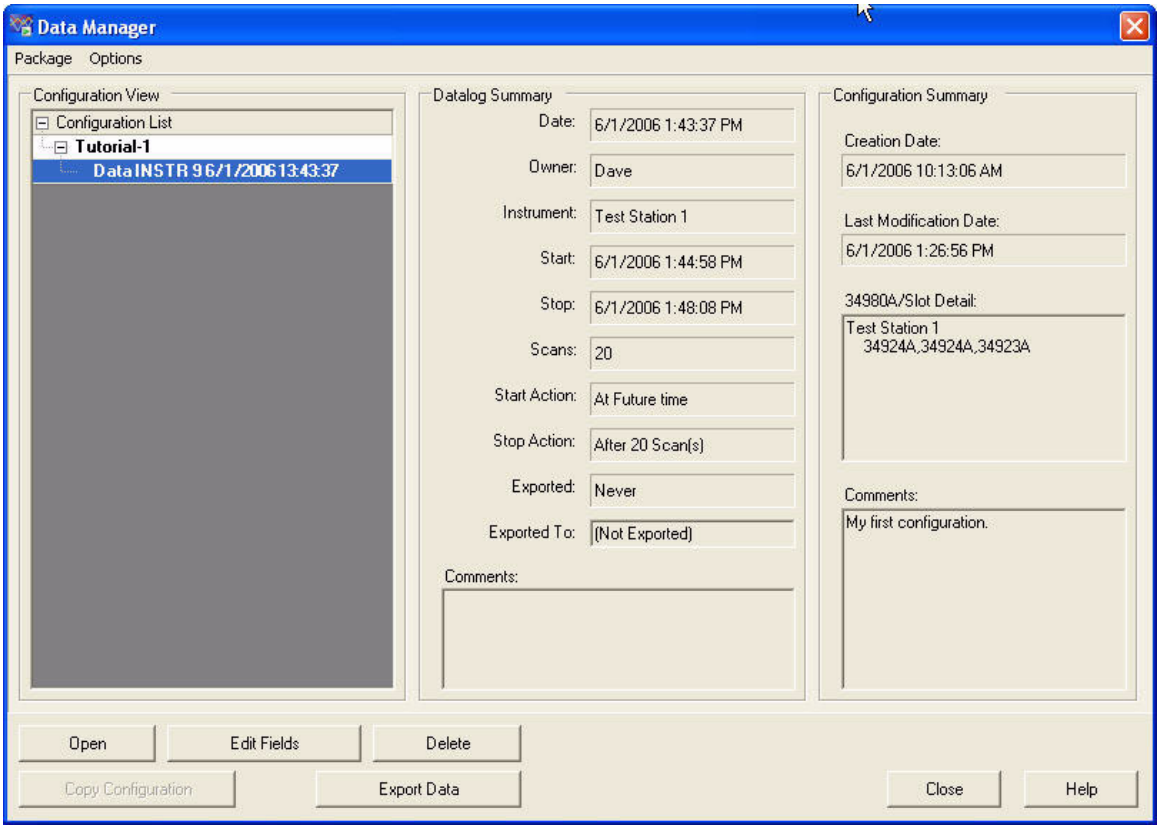
located on the upper toolbar area of the application. If you click the stop button, a confirmation dialog will appear. Click **Yes** to stop the scan.

2 After a slight delay, you will see a **Scan and Log Data Summary** dialog box (see next page). From this dialog box you may, optionally, modify the data log name, the owner, or comments for this datalog. You can also use this dialog box to export your data directly to a file. For this tutorial, just click **Close** to close the **Scan and Log Data Summary**. We will export the data in the next step.


Scan and Log Data Summary
1.Test Station 1 Scan Summary
34980A Settings :
34980A : 34980A <Test Station 1>
Module : 34924A, 34924A, 34923A
Channel Configured :1001, 1002, 1003, 1004, 1005
Scan Settings
Scan Count : 20
Scan Start : At Future time
Start Time : 6/1/2006 1:44:58 PM
Your data has been saved in Data Manager as:
Name: Data INSTR 9 6/1/2006 13:49:37
Owner: Dave
Comments:
Edit Fields
Delete Datalog
Export Data
Your data has been exported to:
(Not Exported)
Close
Help

Step 9. Export the Data

1 The Data Manager provides complete flexibility in opening, editing, and exporting datalogs. To open the Data Manager, click **Data > Data Manager**. You will see a display similar to this:



2 The **Tutorial-1** configuration and the recently scanned datalog should appear in the **Configuration View** column. With the datalog selected as shown above, click the **Export Data** button. The **Export Data** dialog box appears and allows you to specify how to export the data and which data to export. For this tutorial, we will use the default export

settings which creates a CSV (Comma Separated Values) file. Click the **Export to File...** button in the **Export Data** dialog box.

3 The Enter Folder Name dialog box appears. Use the default Name and Path and click OK. For this tutorial, the datalog folder is:

Data Test Station 1 7_8_2006 14_14_21

And the filename is:

Scans_1_To_20_Channels_1001_To_1005.csv

Notice the filename is constructed from the number of scans and the range of channels in the scan. The CSV file can later be imported directly into Microsoft Excel.

4 You can now close the **Export Data** dialog box.

NOTE If you want to automatically export data, prior to your next scan, click **Data > Export Data Preferences** and select **Automatically export to .csv during scan**. This setting automatically saves the data as it is being scanned.

5 As you create configurations and deal with datalogs, you will find the Data Manager to be particularly useful to organize and locate configurations and datalogs. As the last step in this tutorial, click **Data > Data Manager** to open the **Data Manager** dialog box and click the **Help** button. The help describes, in detail, all of the capabilities of the Data Manager.

Congratulations! You have completed the tutorial. You can now start creating your own scanning configurations. Use the online help for the tabs (F1 key) and the help buttons in the dialog boxes to learn more about each step in the process. This help file also contains a number of advanced topics available from the help **Contents** tab, **Index** tab or by searching the help.

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