

# **Agilent 34825A BenchLink Data Logger 3**

## **Getting Started Guide**



**Agilent Technologies**

# Notices

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## Software Revision

This guide is valid for 4.x.x revisions of the Agilent 34825A BenchLink Data Logger 3 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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## Safety Notices

### 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.

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### 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.

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# 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 3

The Agilent BenchLink Data Logger 3 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.

## What's in Data Logger 3?

### Superior Usability

- Tab-based user interface, simple menu structure.

### Data Manager

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

### Data Log Name Template

- Define a name template so you don't need to manually name every data log or exported data file.

### Export Data

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

### **Auto Export Data**

- Automatically export data with pre-configured preferences when the scan completes.

### **Graphing**

- All graph configurations are saved and restored automatically the next time Data Logger 3 is opened.
- Simplified add/remove channels.
- Added graph preferences to allow easy control of graph look and feel.
- Added popup windows for data, alarms, bar charts and markers.
- Automatically generate a graph for each 34970A/34972A.
- Add additional graphs for the same data log.
- Split a graph to allow easy viewing of independent measurements.
- Editable Y Scale and Y Zero Reference.
- Full screen mode.
- Simplified changing the data log being graphed.
- Control the color of high and low alarms.
- Single Channel Statistics available with a Quick Histogram tab.

### **Import**

- Import Data Logger 1 Configurations.
- Import Data Logger II Configurations.

### **Import Module**

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

### **Configure 34970A/34972As**

- Up to four 34970A/34972As scanning simultaneously.
- Download only the configured channels—saves you time!
- Save a 34972A configuration file.

### **Configure Channels**

- Improved copy and paste.
- Improved keyboard data entry.

### **Online Help**

- Completely rewritten with an in-depth technical task orientation.

- New! Getting Started Guide.

### Globalization

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

### Multiple Languages

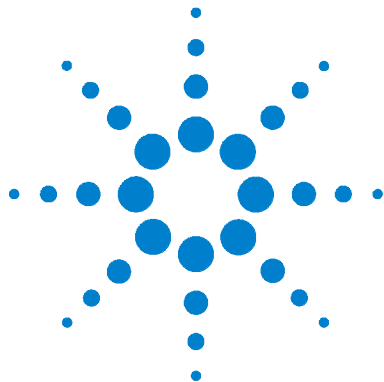
- Application and all online help localized for French, German, Japanese, Simplified Chinese, Korean and English.
- Uses the operating system language settings for supported languages.
- Language changes happen immediately. The operating system can be one language and the product another language.



**Important:** This tutorial DOES NOT require any wiring or input signals connected to the 34970A/34972A(s). Read the safety, warning and caution information in the *34970A/34972A User's Guide* before operating or connecting wiring to the 34970A/34972A and its modules. Module wiring information is located in the *34970A/34972A User's Guide*.







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## Step 1. Check System Requirements

BenchLink Data Logger 3 software is not dependent on any earlier versions of Data Logger software. It will install in a separate directory on your PC. You can import the configuration files from previous versions into Data Logger 3. Data logs collected using Data Logger 1 or Data Logger II requires those versions of Data Logger to export the data.

### System requirements:

- Operating System: Windows 7® Pro, Enterprise and Ultimate (32 bit and 64 bit), Windows Vista® (32 bit and 64 bit), XP SP3 (does not support any Home edition).
- Controller: Recommend, Pentium® 4, 800 MHz or greater. Minimum, Pentium III, 500 MHz.
- RAM: Recommend, 256 MB or greater. Minimum, 128 MB.
- Disk Space: Recommend, 200 MB, minimum, 100 MB
- Display: 1024x768 resolution, 256 colors
- Agilent IO Libraries Version 14.1 or later (on CD included with instrument or download from ADN at <http://www.agilent.com/find/iolib>)

## Step 2. Install the IO Libraries Suite Software

If possible, you should use the current version of the Agilent IO Libraries Suite. This version supports the newest interfaces and operating systems, and has the most advanced features. However, you may need an earlier version of the IO Libraries Suite to support an older interface or operating system.

If you have the *Automation-Ready CD*, you can install a previous version directly from the CD-ROM. In Windows Explorer, navigate to the folder called **Previous Versions** on the CD-ROM.

If you do not have the *Automation-Ready CD*, go to: <http://www.agilent.com/find/iolib> to locate the version you need.

### 1 Install the IO Libraries Suite:

- Close all other applications on your PC, insert the *Automation-Ready CD with Agilent IO Libraries Suite* into your CD-ROM drive, and follow the instructions on your screen.
- If the IO Libraries Suite installation does not start automatically, select **Start > Run** (on the Windows **Start** menu) and type `<drive>:\autorun\auto.exe`, where *drive* is your CD-ROM drive.
- After IO Libraries Suite has been successfully installed, you will see the IO Control (**IO** icon) in the taskbar notification area on your PC screen:



The taskbar notification area is where the clock is usually displayed.

- 2 If you have difficulty with the installation, see Chapter 3, of the *IO Libraries Suite Getting Started Guide*, which you can display (in PDF format) by clicking the IO Control and choosing **Documentation > IO Libraries Suite Getting Started**. The **Documentation** menu also includes manuals for Agilent interface hardware products that you have installed.

## Step 3. Install the BenchLink Data Logger 3 Software

The Agilent BenchLink Data Logger 3 Software is contained on the 34825A product CD-ROM. The 34825A CD-ROM is included with every 34970A/34972A shipment. You can also download the application from the Agilent Web site:

<http://www.agilent.com/find/34825A>

### Installation Procedure

- 1 Insert the 34825A Product CD into your CD-ROM drive.
- 2 From the product CD-ROM window that is displayed, locate *Agilent BenchLink Data Logger Software* in the **Software** menu.
- 3 Click **Install** and follow the instructions as prompted by the installation utility.

### On-Line Help System

The BenchLink Data Logger 3 software is shipped with an extensive on-line help system to help you learn the features of the software as well as troubleshoot any problems that might arise as you are using the software. As you are installing the software, you will notice that the on-line help system is available in several languages.

## Step 4. Install Interface Hardware

If you received the Agilent IO Libraries Suite when you purchased an instrument or an interface product (such as an Agilent GPIB card or USB/GPIB interface converter), it is time to install the hardware now.

Consult the documentation for your hardware product for installation instructions and specific hardware configuration (for example, setting Ethernet or GPIB addresses). General instructions for hardware installation appear in the *Agilent Connectivity Guide*, which you can display (in PDF format) by clicking the IO Control and choosing **Documentation > Connectivity Guide**. The **Documentation** menu also includes manuals for Agilent interface hardware products that you have installed.

## Step 5. Install Equipment and Connect Interfaces

### WARNING

**Read the safety, warning and caution information in the *Agilent 34970A/34972A User's Guide* before installing modules, connecting cables or wiring, or connecting power to the 34970A/34972A.**

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Refer to the *Agilent 34970A/34972A User's Guide* for information on installing modules, connecting test wiring, configuring the remote interface, connecting interface cable(s) and applying power to the instrument.

The *Agilent 34970A/34972A User's Guide* is available from the Agilent Web site:


<http://www.agilent.com/find/34970A>

or

<http://www.agilent.com/find/34972A>

## Step 6. Run the Agilent Connection Expert to Verify the I/O Configuration

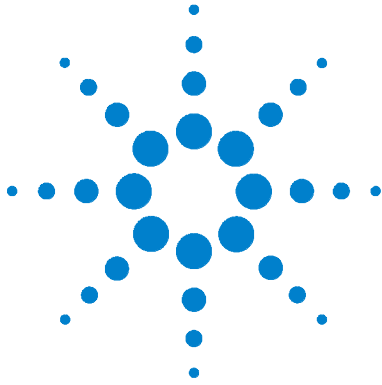
- 1 Run Connection Expert. If the Connection Expert utility does not run automatically at this time, click the IO Control (IO icon in the Windows notification area) and then click **Agilent Connection Expert**.
- 2 Change the I/O configuration, if necessary. Connection Expert will automatically detect most interfaces and instruments, and will assign names and other default configuration settings. If you want to change these parameters, you can do so in the Connection Expert window.
  - Select the instrument or interface in the explorer pane in the center of the Connection Expert window.
  - The properties of the selected item appear in the properties pane on the right. When you right-click on an item in the explorer pane, you see a shortcut menu of actions that you may take on that item. These actions are also available from the menus at the top of the Connection Expert window. The most common actions are also listed in the Connection Expert's task guide (the left pane of the window).
  - You may also add instruments or interfaces manually to your test system configuration if Connection Expert does not automatically detect the hardware (for example, if it is connected via Ethernet or via serial port).
  - Refer to the *Agilent IO Libraries Suite Online Help* for more information on Connection Expert and on configuration changes.
- 3 Test the instrument connections.
  - Connection Expert will automatically send an identification query (**\*IDN?**) to any instrument that has its auto-identify property set to **Yes**. (See the *Agilent IO Libraries Suite Online Help* if you want to turn this function off.)

- When you see a green check mark on the icon representing an instrument  , this means that the instrument has responded as expected. (Note that some instruments do not support the **\*IDN?** query and will not respond appropriately.) The instrument's identification information is displayed in the properties pane on the right side of the Connection Expert window.
- You can explicitly test the connections to your instruments, and exercise more of their functionality, by selecting **Send commands to this instrument** in the task guide or shortcut menu. This starts the Interactive IO utility, which allows you to send commands to your instruments and see their responses. Note that some commands (such as **\*TST?**, instrument self-test) may take longer than Interactive IO's default timeout; you can modify the timeout in the Interactive IO window by selecting **Interact > Options...**

## Step 7. Run the BenchLink Data Logger 3 Software

You can now run the BenchLink Data Logger 3 software. Chapter 2 contains a step-by-step tutorial showing you how to operate the BenchLink Data Logger 3 software.





## 2 Getting Started with BenchLink Data Logger 3

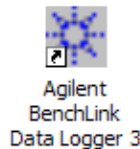
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# Getting Started Tutorial

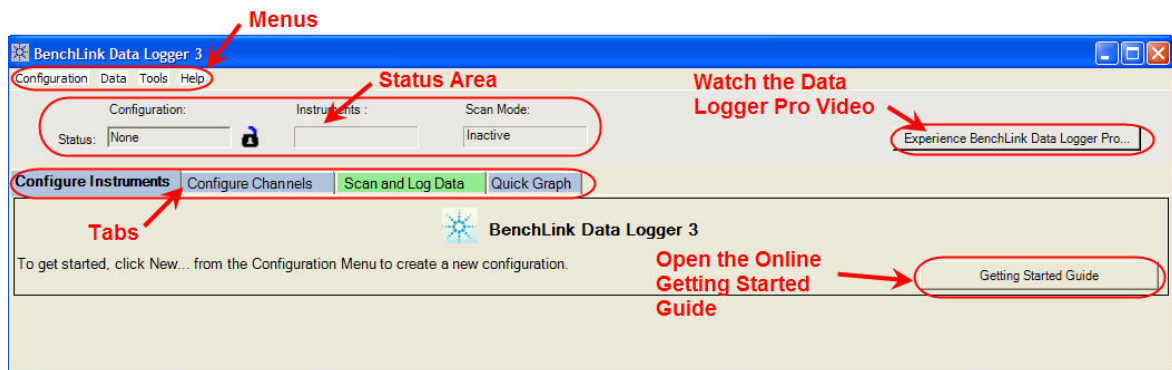
This getting started tutorial introduces you to the BenchLink Data Logger 3 and shows you how to:

- Connect to one or more 34970A/34972As
- 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

To start Benchlink Data Logger 3, click this shortcut on your desktop:



The graphic below shows the menus, status area and tabs in the user interface. The Data Logger 3 online help (available by pressing F1 or clicking the Help menu) describes the user interface in detail.



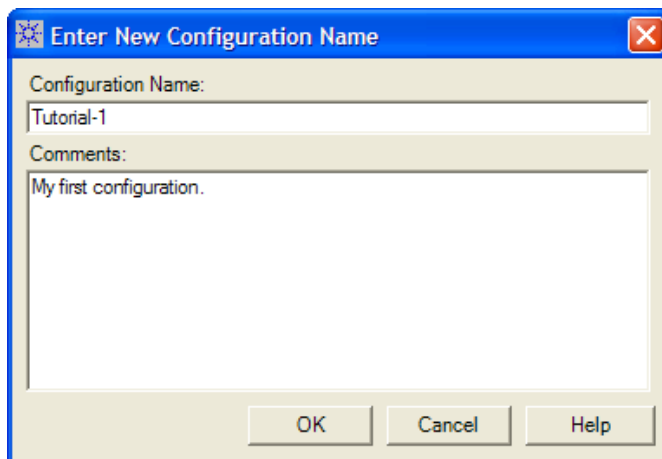
## Step 1. Create a New Configuration

In this step we will create a new configuration. A configuration contains all of the instrument settings, scan settings and graph settings that you have configured in the Data Logger 3 application. Following a scan, each scan data log is also associated with the configuration. A configuration events log is also associated with each configuration.

### NOTE

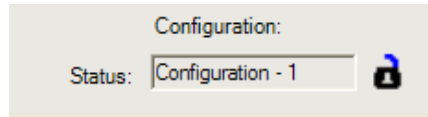
For purposes of example, this tutorial assumes you have a 34901A or 34902A multiplexer module installed in a 34970A or 34972A. Although you can use up to four 34970A/34972As in a configuration, this tutorial uses only one 34970A. You should not have any channels connected to external equipment or signal sources for this tutorial.

- 1 Click **Configuration > New...** to create a new configuration.
- 2 You will be prompted to enter a new configuration name and comments. For this tutorial, enter the information shown below and click **OK**.



## 2 Getting Started with BenchLink Data Logger 3

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 data log and is editable. Once a scan has occurred and a data log exists for the configuration, the padlock will be shown as locked. To alter a locked configuration, you must either delete the associated data log(s) or copy and rename the configuration.

---

## Step 2. Configure Instruments

In this step you will identify which 34970A/34972A instrument(s) to use in the configuration.

Data Logger 3 can be used in either of these two modes:

- **Connected to Instrument (Connected Mode)** – Select this mode if you have one or more instruments connected via interface to your computer. Connected Mode is the recommended mode to use whenever possible. This is because, in Connected Mode, the software automatically determines the instrument address and installed modules.
- **Not connected to Instrument (Not Connected Mode)** – This mode allows you to develop scanning configurations “off-line” without being connected to any instruments. For example, you can develop a configuration in your office and later connect to instruments on the production floor.

### NOTE

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

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

### NOTE

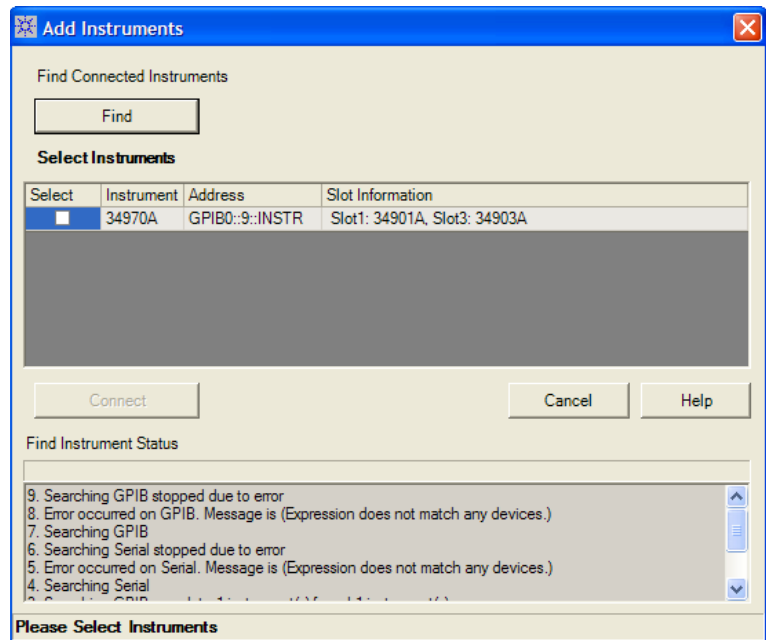
You can access the help for the selected tab by clicking the F1 key.

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

### NOTE

The Find button will find only 34970A/34972A instruments. It is not a general discovery tool for all devices on the interface.

- 4 You should now see a listing of the instruments found. For example:



The **Find Instrument Status** area shows the status of the find operation. If you do not see any instruments listed, check that the interface is connected and the instrument 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 instrument.

### NOTE

Data Logger 3 uses the IO Libraries to find instruments.

- 5 In the column labeled **Select**, click the box next to the instrument(s) you want to add. You can add up to four instruments in a single configuration.
- 6 Click the **Connect** button. This reads the configuration of the instrument(s) and populates the **Configure Instruments** tab with the instrument number, address and modules found in the instrument.
- 7 Notice the **Module Mode** column. For multiplexer modules, this mode will be set to **Scan Mode**. Typically, you should leave the **Module Mode** set to **Scan Mode**. For switch modules, this mode will be set to **Switch 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 the channels for a given module.

## 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.

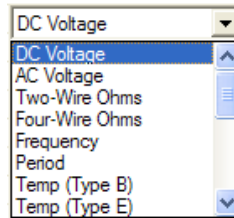
- 2 You may see this progress message **Populating scan grid...** This may take several seconds depending on the number of modules you have.
- 3 The instrument number, address and modules are shown in the tree view in the column labeled **Channels** on the left side of the grid. You can collapse the tree view by clicking  next to a instrument or module. Click  to expand a collapsed tree view.
- 4 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 101, 102, 103, 104 and 105.
- 5 In the **Name** column, enter these names for the five selected channels: *Power In, Low Load, High Load, Out Freq, Oven Temp*.

Channels		Enable Channel	
Instruments	Scan	Name	
└─ 1. GPIB0::9::INSTR			
└─ └─ 34901A			
└─ └─ └─ 101	<input checked="" type="checkbox"/>	Power In	
└─ └─ └─ 102	<input checked="" type="checkbox"/>	Low Load	
└─ └─ └─ 103	<input checked="" type="checkbox"/>	High Load	
└─ └─ └─ 104	<input checked="" type="checkbox"/>	Out Freq	
└─ └─ └─ 105	<input checked="" type="checkbox"/>	Oven Temp	
└─ └─ └─ 106	<input type="checkbox"/>		

- 6 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)**.

Channels	Enable Channel		Meas
	Scan	Name	
Instruments			
└─ 1. GPIB0::9::INSTR			
└─ 34901A			
└─ 101	<input checked="" type="checkbox"/>	Power In	DC Voltage
└─ 102	<input checked="" type="checkbox"/>	Low Load	Four-Wire Ohms
└─ 103	<input checked="" type="checkbox"/>	High Load	Two-Wire Ohms
└─ 104	<input checked="" type="checkbox"/>	Out Freq	Frequency
└─ 105	<input checked="" type="checkbox"/>	Oven Temp	Temp (Type B)
└─ 106	<input type="checkbox"/>		DC Voltage
└─ 107	<input type="checkbox"/>		DC Voltage
└─ 108	<input type="checkbox"/>		DC Voltage
└─ 109	<input type="checkbox"/>		DC Voltage
└─ 110	<input type="checkbox"/>		DC Voltage
└─ 111	<input type="checkbox"/>		DC Voltage
└─ 112	<input type="checkbox"/>	Low Load	Four-Wire Ohms
└─ 113	<input type="checkbox"/>		DC Voltage

#### NOTE

Notice that for 4-wire ohms, a paired channel (channel n+10 for the 34901A or channel n+8 for the 34902A), is automatically configured for the sense lines.

- 7 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**.

Channels	Enable Channel		Measurement		
	Scan	Name	Function	Range	Res
1. GPIB0:9::INSTR					
34901A					
101	<input checked="" type="checkbox"/>	Power In	DC Voltage	+/- 1 V	5.5
102	<input checked="" type="checkbox"/>	Low Load	Four-Wire Ohms	10 K	5.5
103	<input checked="" type="checkbox"/>	High Load	Two-Wire Ohms	100 K	5.5
104	<input checked="" type="checkbox"/>	Out Freq	Frequency	Auto	5.5
105	<input checked="" type="checkbox"/>	Oven Temp	Temp (Type B)	None	C
106	<input type="checkbox"/>		DC Voltage	Auto	5.5
107	<input type="checkbox"/>		DC Voltage	Auto	5.5
108	<input type="checkbox"/>		DC Voltage	Auto	5.5
109	<input type="checkbox"/>		DC Voltage	Auto	5.5
110	<input type="checkbox"/>		DC Voltage	Auto	5.5
111	<input type="checkbox"/>		DC Voltage	Auto	5.5
112	<input type="checkbox"/>	Low Load	Four-Wire Ohms	10 K	5.5
113	<input type="checkbox"/>		DC Voltage	Auto	5.5

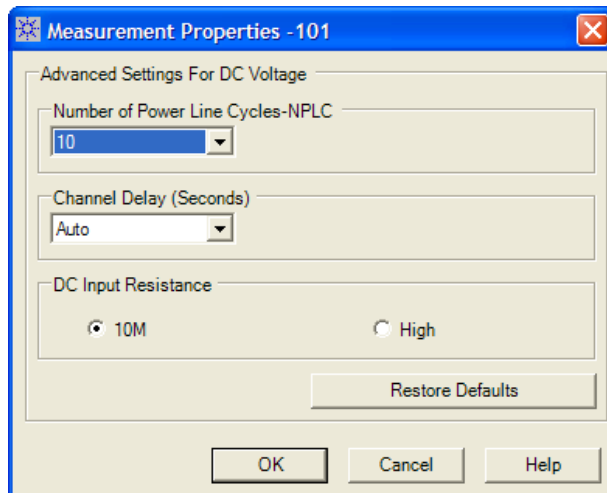
**NOTE**

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

- 8 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** as shown on the following page.

Channels	Enable Channel		Measurement			
	Scan	Name	Function	Range	Res	Mu
1. GPIB0:9:INSTR						
34901A						
101	<input checked="" type="checkbox"/>	Power In	DC Voltage	+/- 1 V	5.5	...
102	<input checked="" type="checkbox"/>	Low Load	Four-Wire Ohms	10 K	6.5	...
103	<input checked="" type="checkbox"/>	High Load	Two-Wire Ohms	100 K	5.5	...
104	<input checked="" type="checkbox"/>	Out Freq	Frequency	Auto	4.5	...
105	<input checked="" type="checkbox"/>	Oven Temp	Temp (Type B)	None	F	...
106	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
107	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
108	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
109	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
110	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
111	<input type="checkbox"/>		DC Voltage	Auto	5.5	...
112	<input type="checkbox"/>	Low Load	Four-Wire Ohms	10 K	6.5	...
113	<input type="checkbox"/>		DC Voltage	Auto	5.5	...

- 9 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 101, and set the **Number of Power Line Cycles-NPLC** to **10** and click **OK**. This sets the integration time for the DMM.




## 2 Getting Started with BenchLink Data Logger 3

Notice the resolution for channel 101 is now 6.5 digits—not 5.5 digits. This is because integration time and measurement resolution are directly related.


**10** 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.

## 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**, **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**, 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 **Data Control** column. The **Set Data Log Fields** dialog box appears. From this dialog you can automatically name the data log from the template, or uncheck the default naming and enter a name for the data log. You can also add comments, change the owner, and choose to have the data log 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 data log. Click **Cancel** to close this dialog box.

### NOTE


The template allows you to select the fields that will be included in the data log 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 data log name when using the template.

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



## Step 5. Start the Scan

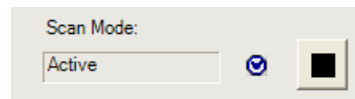
In this step we start the scan and view the results.

- 1 To start the scan, click the start button  under the **Start/Stop** column. Once you have started the scan, the settings you configured in **Scan Control** become enabled. For example, if scanning was set to start **Immediately**, the scan will start when you click the start button. For this tutorial, we set a date and time to start the scan. Our scan will start when the specified date and time occurs.

### NOTE

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 You will see some messages indicating the configuration is being downloaded to the instrument.
- 3 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.



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

- 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.

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- 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.



## 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

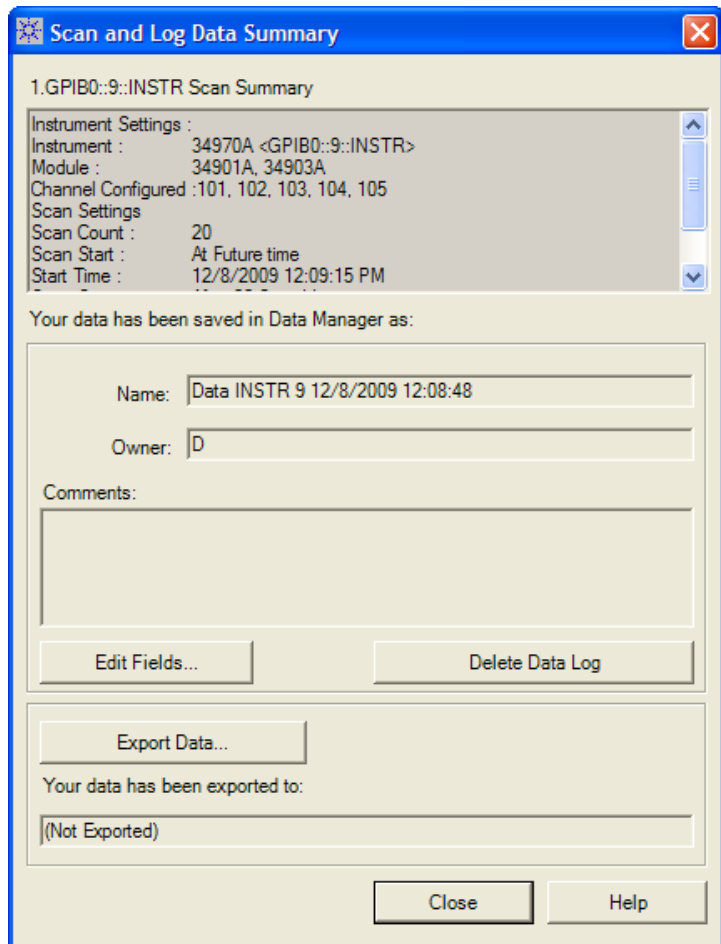
If you do not see the data, you may need to adjust the x and y scales.

- 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

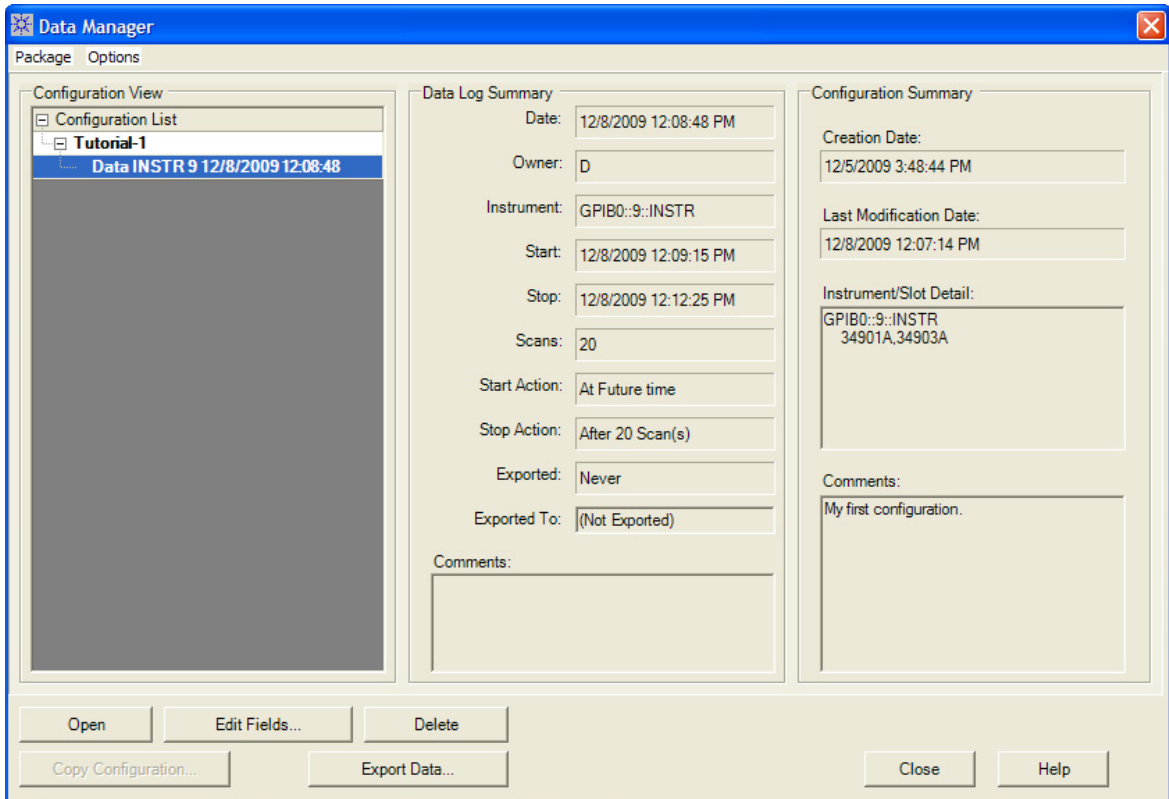
In this step we will stop the scan.

- 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. From this dialog box, you may optionally, modify the data log name, the owner, or comments for this data log. 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.



## Step 9. Export the Data

- 1 The Data Manager provides complete flexibility in opening, editing, and exporting data logs. 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 data log should appear in the **Configuration View** column. With the data log 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** Browse to the directory path in which to store the data file and click **Save**. The CSV file can later be imported directly into Microsoft Excel.
- 4** You can now close the **Export Data** dialog box.
- 5** As you create configurations and deal with data logs, you will find the Data Manager to be particularly useful to organize and locate configurations and data logs. 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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