Agilent Technologies Y1131A Verification ⁄ Diagnostic Software

Getting Started Guide

Shock Hazard. To avoid electric shock, disconnect all field wiring and terminal blocks from installed modules and the Analog Bus connector before connecting the Y1131A verification/diagnostic hardware.

The Agilent Y1131A Verification/Diagnostic Software provides a set of diagnostic tests for the relay switching modules available for the Agilent 34980A Multifunction Switch/Measure Unit. The software provides module-specific tests to assist you with troubleshooting possible relay failures and predicting system maintenance requirements. Custom terminal blocks are available to route signals and isolate individual relays for verification and diagnostics.

Contents of Your Shipment

The following items are shipped with your Y1131A Verification/Diagnostic Software kit:

- Agilent Y1131A Getting Started Guide

- Agilent Y1131A Verification/Diagnostic Software CD-ROM, which contains the following:

  - Verification Software Installation
  - Product Documentation
  - Simplified Block Diagrams for the Verification Terminal Blocks

- Optional Verification Terminal Blocks (required to run software):

  - Option 001: Terminal Block for 34921A, 34923A, and 34925 Multiplexer Modules
  - Option 002: Terminal Block for 34922A and 34924A Multiplexer Modules
  - Option 003: Terminal Block for 34931A, 34932A, and 34933A Matrix Modules
  - Option 004: Terminal Block for 34937A General-Purpose Switch Module
  - Option 005: Terminal Block for 34938A General-Purpose Switch Module

If you have questions about your shipment, or if you need information about warranty, service, or technical support, please contact Agilent Technologies:

    In the United States: (800) 829-4444
    In Europe: 31 20 547 2111
    In Japan: 0120-421-345

Or, go to www.agilent.com/find/assist for more information on contacting Agilent in your specific location. You can also contact your Agilent Technologies representative.

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Software Installation

System Requirements:

Microsoft® Windows® NT 4.0/2000/XP
Adobe® Acrobat® Reader V5.0 or higher
Agilent IO Libraries Suite or equivalent
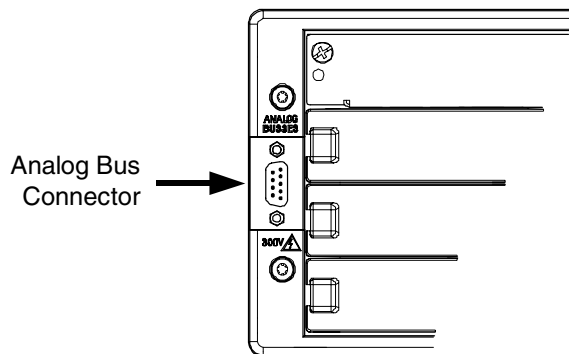Y1131A Verification Terminal Blocks

NOTE   If you have previously installed a version of the Y1131A software on your computer, be sure to remove that version before reinstalling the software. To remove the software, go to **Control Panel** | **Add or Remove Programs** and remove "Agilent 34980A Verification/Diagnostic Software".

1. Insert the disk into your CD-ROM drive.

2. The CD should start automatically. If it does not start, go to the Start Menu and select the Run command. Then type: <CD drive letter>:**setup.exe**.

3. To launch the software, navigate to **Programs** > **Agilent** > **34980A Diagnostic Software**.

Hardware Installation

The Y1131A Verification/Diagnostic Software kit contains module-specific terminal blocks, which are used to route signals and isolate individual relays during the test. The verification terminal blocks connect to modules installed in the 34980A mainframe (for more information, see the Agilent 34980A *Getting Started Guide*). Each terminal block is pre-wired with a 9-pin ribbon cable terminated with a D-Sub connector. Prior to running a test, attach the terminal block to the desired module and connect the ribbon cable to the *Analog Bus* connector located on the 34980A's rear panel (see below).


Analog Bus
Connector

WARNING   **To avoid electrical shock due to high voltages present on the Analog Buses, the software requires that all modules not under test be disconnected from the Analog Buses. With the verification terminal block connected to an installed module, all voltages present on the Analog Buses will also be present on the terminal block's D-Sub connector (located at the end of the ribbon cable).**

Establishing Connection to the Instrument

The 34980A supports GPIB, LAN, and USB interfaces. To establish a connection between the 34980A and your computer, you must have the desired interface properly configured (for more information, see the Agilent 34980A *User's Guide*). You must also have the proper interface cable connected between the 34980A and your computer.

The following steps show how to establish a connection over the desired interface from the "Select Instrument" tab.

1. Select the desired interfaces that you want to search and then click the "Find Interfaces" button.

2. The located interfaces are displayed in the drop-down list on the right side of the window. From the drop-down list, select the desired interface (or type the desired address) and then click the "Initialize" button. The software will attempt to connect to the selected interface and will then test the connection by sending the *IDN? command. The results are displayed in the status box.

3. After establishing a connection to your instrument over the desired interface, click the "Run Tests" tab to execute the diagnostic tests.
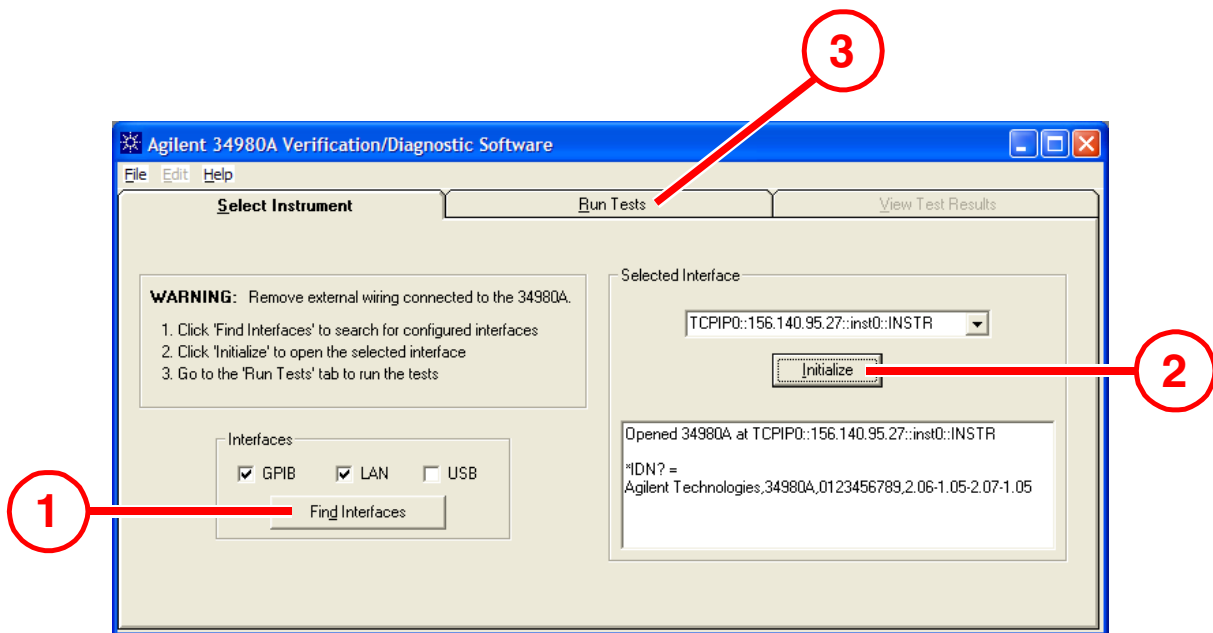
# Executing the Diagnostic Tests

The diagnostic tests are performed on one slot at a time and require the use of the custom verification terminal blocks to route signals (the optional terminal blocks are listed on page 1). Prior to running a test, be sure to attach the terminal block to the module in the desired slot and connect the ribbon cable to the *Analog Bus* connector located on the 34980A's rear panel.

WARNING **To avoid electrical shock, remove terminal blocks and external cabling from all modules not being tested prior to running any test procedures. In addition, since the software uses the Analog Buses to route signals to and from the module being tested, all external signals must be removed from the Analog Bus connector located on the 34980A's rear panel.**

NOTE The Y1131A software provides a set of diagnostic tests for the 34980A's switching modules (see list of supported modules on page 1). Although the non-switching modules are not supported, the software will *not* generate an error and the test will return module identification information only.

The following steps show how to execute a test from the "Run Tests" tab.

1. From the list on the left side of the window, select the desired module to test. Note that the module information shown on the right side of the window is updated for the selected slot. To run a repeated measurement of channel resistance, check the box for "Run Repeated Reliability Tests" located at the lower left corner of the window. The repeated measurements will fall within a certain standard deviation. As the standard deviation increases over time, this will be a good indication that the relay contact is aging.

2. After verifying that a terminal block is connected to the selected module, click the "Run Test" button. The test will begin immediately. The testing status is shown below the "Run Test" button. To stop a test in progress, click the "Abort Test" button.
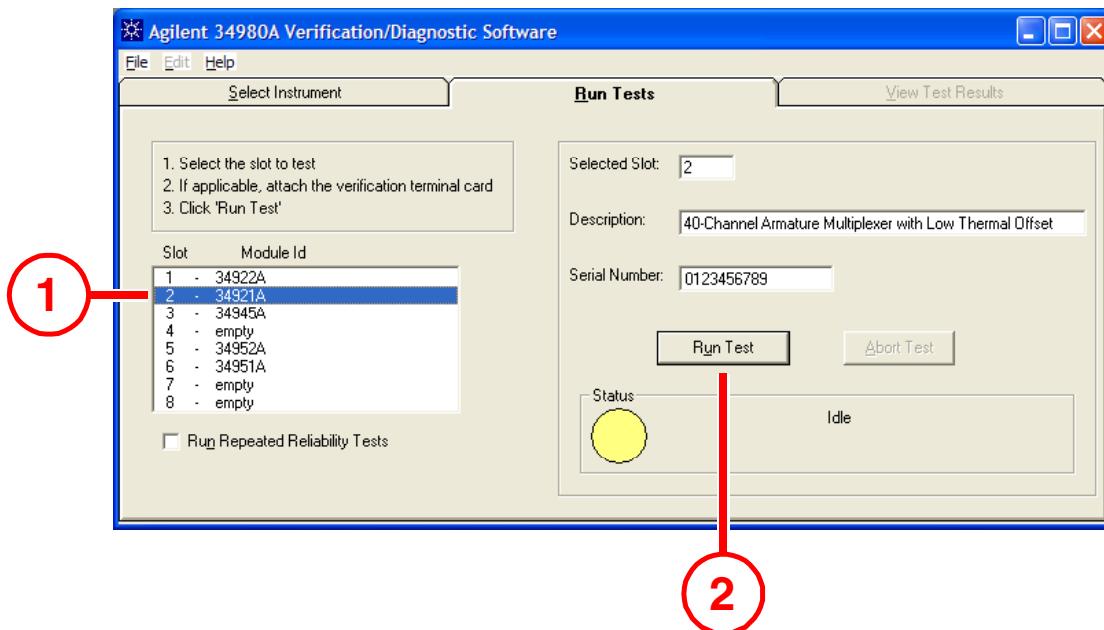
Viewing the Test Results

The following steps show how to view the test results from the "View Test Results" tab. The test results are stored by slot.

1. From the list on the left side of the window, select the desired slot. Note that the test report shown on the right side of the window is updated for the selected slot.

2. Use the scroll bar to view the entire test report. You can also maximize the window if desired.

3. The test results are available in HTML or .CSV format. For either file format, you can print the report or save the information to a file.
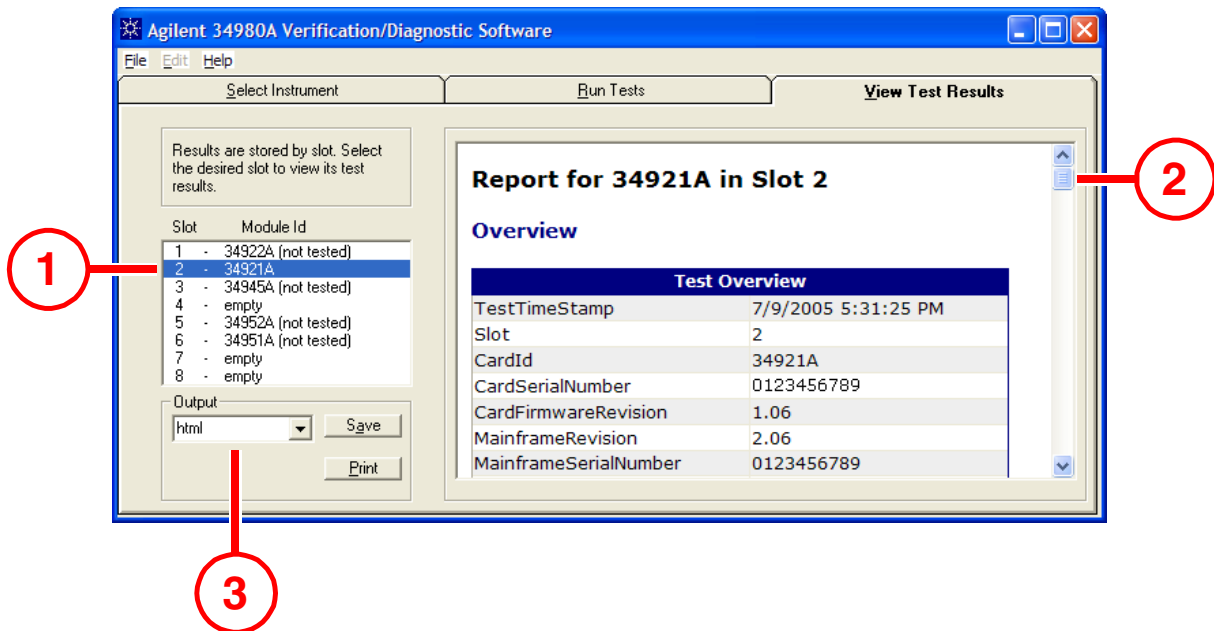
> **NOTE** One type of failure that may be reported is referred to as a *single-sided short*. A single-sided short refers to a differential channel on which one side of the differential relay is stuck closed. These shorts are difficult to detect since while in the differential mode an open will appear open and a short will appear as a short.

> **NOTE** After running the diagnostic tests, be sure to reboot the 34980A to return the modules to a known state.

Channel Resistance Measurement Philosophy

For several of the relay switching modules, it is very difficult to isolate a particular channel. The Y1131A software, used in conjunction with the provided verification terminal blocks, attempts to isolate measurement channels in a repeatable manner. Although the absolute reported measurement of a channel may vary depending on your application or signal routing, the relative measurement with respect to the channel itself will be indicative of the actual variation in channel resistance over time.

As much as possible, the methodology used to measure channel resistance is noted in the test report generated by the software. In addition, we have provided simplified block diagrams for all of the verification terminal blocks to help you better understand how specific channels are measured. The block diagrams are provided in Adobe® Acrobat® (PDF) format on the Y1131A CD-ROM.

NOTE   All multiplexer and matrix channels are measured differentially.

Module Verification Philosophy

The Y1131A software tests for the three primary types of relay failures: shorts, opens, and single-sided shorts on a differential channel. The degree to which these failures can be isolated to a particular channel depends on the methodology used to test the channel and number of relay failures on the module. Although the software attempts to isolate the particular failure, the primary intent is to give a pass/fail indication for future use.

NOTE   All multiplexer and matrix channels are measured differentially.