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PACKARD

Quick Start Guide

**HP 14565A Device
Characterization
Software**

**for Windows 98,
Windows 95, and
Windows NT 4.0**

Contents

Description

What the HP 14565A Will Do

The HP 14565A Device Characterization Software is an easy-to-use graphical user interface for the HP 66300-series Dynamic Measurement DC Sources. With it, you can:

— Control output and measurement functions from a single screen.

— View an oscilloscope-like display of dynamic output measurements.

— Superimpose up to two stored waveforms on active waveform data.

— Get measurement details by zooming in on active waveforms.

— View calculated measurements based on active waveforms.

— Save and recall waveform data.

What the HP 14565A Will Not Do

The HP 14565A Device Characterization Software does not:

— Control instruments other than HP dc sources.

— Provide drivers for other HP-IB instruments.

— Operate with Windows 3.1.

System Requirements

PC
— 486DX66 (minimum)
— 16 Mbytes RAM
— 4 Mbytes of disk space

32-bit Platforms
— Windows 98
— Windows 95
— Windows NT 4.0

Supported I/O
— HP 82340B, HP 82341C, HP82341D, HP 82335B[1]
— National AT GP-IB/TNT, AT GP-IB/TNT PnP (Windows 95)
— RS-232

[1]The HP 82335B is only supported for Windows 95, provided you have either the E2094F or E2094E I/O library.

Supported Dc Source Models
— HP 66311A
— HP 66312A
— HP 66332A

Installing and Running the Software

NOTE: Before running the HP 14565A application, you must have installed and connected your dc source to the PC using the appropriate interface cable. If you are using an HP-IB/GP-IB interface, you must have the appropriate card installed and configured on your PC. If you are using an HP interface card, you must also have the appropriate 32-bit SICL library drivers installed on your PC.

1. Place Disk #1 in the A: drive of your computer and run SETUP.EXE.

2. Follow the directions on the screen to install the software. The README.TXT file contains product updates or corrections that are not documented in the help file. Use any text editor to open and read this file.

3. To run the application, click on the **Start** button and select: **Programs** | **HP 14565A DCS** | **HP 14565A Device Characterization Software**.

Configuring the I/O

Make sure that the dc source is turned on. To configure the I/O, select the **I/O Configuration** command in the Edit menu. This step is necessary to establish communication with the dc source. The I/O configuration screen comes up automatically if no dc source is configured.
Note that the serial port is much slower than the HP-IB interface.
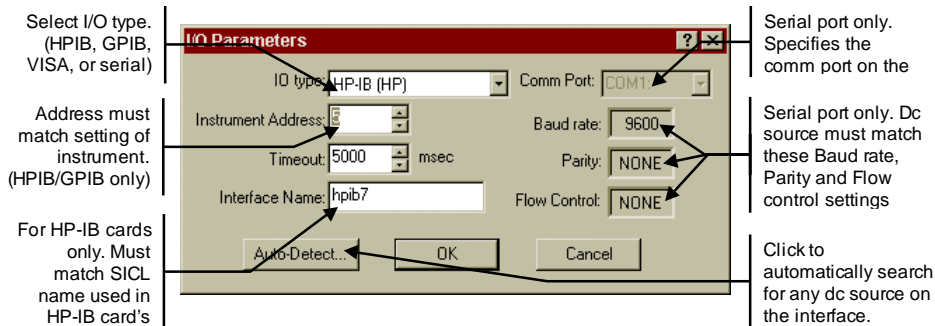
If there seems to be no communication between the HP 14565A application and the dc source, select **Auto Detect** to detect any dc sources connected to your PC. Also, try resetting the I/O interface by clicking the reset button. This also resets the dc source to its default settings.

NOTE: If you program the HP dc source from the front panel of the unit, you will need to refresh or update the HP 14565A application. Go to the **View** menu and select the **Reread Instrument State** command.

Performing Basic Operations

The **Main** window appears when you first run the HP 14565A application. From this window you can control the output of the dc source as well as view basic output measurements.

Click A to measure current or V to measure voltage.

Turn on the dc source

Type in the output voltage and current.

Click to make a measurement. This overwrites the previous waveform.

Adjust values to vary sample rate and vertical scale. Can be done before or after
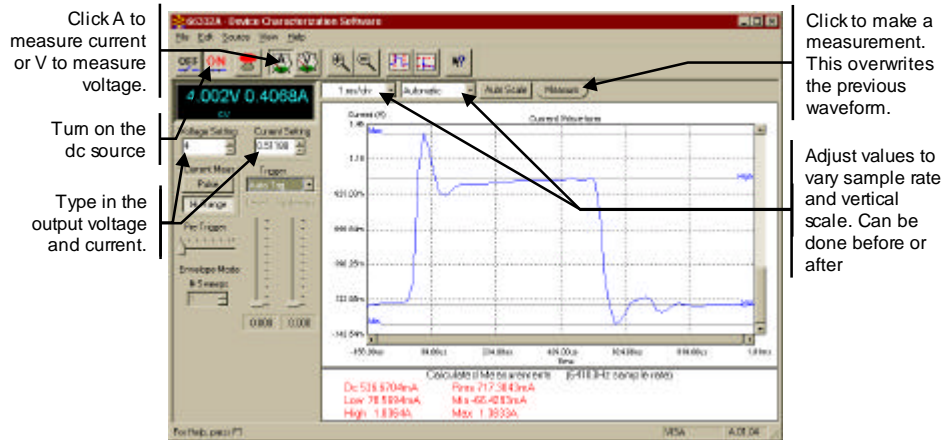
To set the voltage and current levels:

— Click in the field labeled **Voltage Setting**, type in the desired output voltage and press Enter.

— Enter a current limit value in the field labeled **Current Setting**.

To turn on the output:

— Enable the dc source output by pressing the **ON** button. If the message **OVLD** appears in the display, set the Current Meas control to the Hi Range.

To make a measurement:

— Click the **A** button to select current measurements; click the **V** button to select voltage measurements.

— Click the **Measure** button to make the measurement.

— Adjust the time/div and amps/div fields to vary the sample rate and vertical scale. Click **Auto Scale** to fit the display to the acquired waveform.

To display a sample waveform:

— Select the **Load Waveform** command in the File menu, and then select **DemoWaveform1.txt**.

— Select **Active Waveform** in the Load Waveform Location dialog box. The waveform should match the one shown in the above figure.

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Display Area

The display area displays the output measurement after the Measure button is pressed. The following figure describes the various measurements displayed in the window.
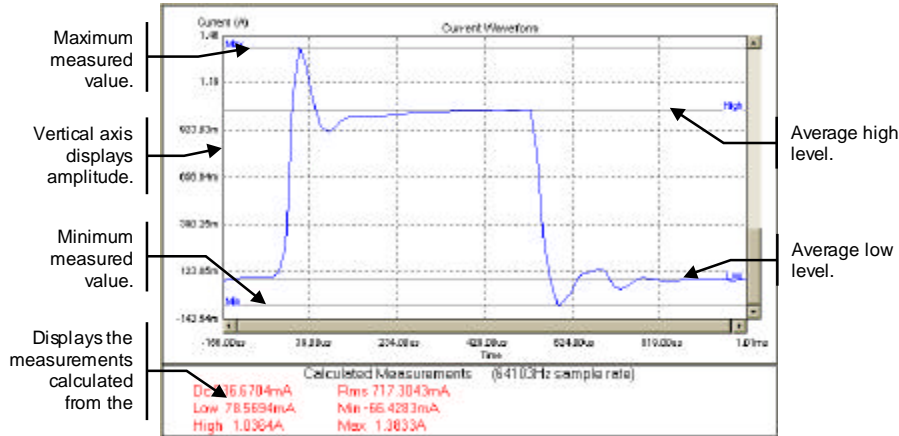
The values in the measurement area at the bottom of the display are calculated from the all of the data that is captured in the display. If horizontal markers have been set, measurements are calculated only from the data between the markers. Refer to Performing Measurements on Waveforms.
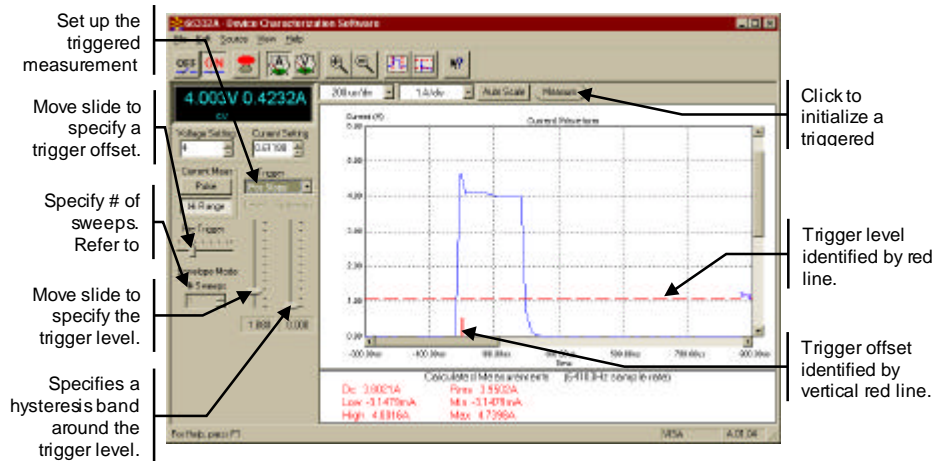
Calculated measurements at the bottom of the display may not agree exactly with values shown on the front panel of the instrument if the sample rate of the display differs significantly from the instrument's front panel sample rate.

Making Triggered Measurements

Triggered measurements let you control when the measurement trigger will occur. The following figure describes the various trigger controls.

NOTE: If you do not know where to set the trigger level, you can make a measurement with the trigger set to Auto Trig. Then view the measurement to see where to place the trigger level. Set the trigger controls and make another measurement.

— Press the A button to select current measurements or press the V button to select voltage measurements.

• Set the **time/div** control to a value that is appropriate for the load's transient timing.

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Set up the triggered measurement

Move slide to specify a trigger offset.

Specify # of sweeps. Refer to

Move slide to specify the trigger level.

Specifies a hysteresis band around the trigger level.

Click to initialize a triggered

Trigger level identified by red line.

Trigger offset identified by vertical red line.

- Select a trigger setting. Choose from **Pos Slope**, **Neg Slope**, or **Either Slope** to set up the triggered measurement.

- Adjust the **Level** slide control until the trigger level is at the point where the trigger should occur. The trigger level is displayed as a red horizontal line on the display.
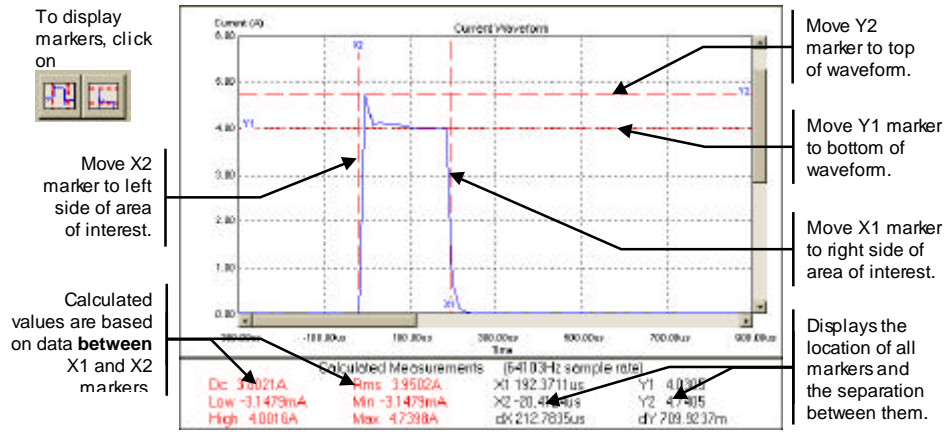

NOTE: The trigger level cannot go negative. Set the trigger control to Auto Trig to trigger negative waveforms.

- Use the **Pre-Trigger** control to show pre-trigger waveform information. When this control is used, the trigger point will be displayed as a short vertical red line on the bottom of the waveform display graph.

- To prevent signal noise from triggering a measurement, you can adjust the **Hysteresis** slide control to create a hysteresis band around the trigger level. The hysteresis band is shown in yellow. Triggers cannot occur inside the hysteresis band.

- Use the Envelope control to more accurately average the High level of multiple current pulses (refer to the online Help for more information).

- Press the **Measure** button to initiate the triggered measurement.

- The display should now show the voltage or current waveform starting at the trigger level.

- Change the **amps/div** control to adjust the vertical scale or press the **Auto Scale** button to maximize the displayed waveform size.
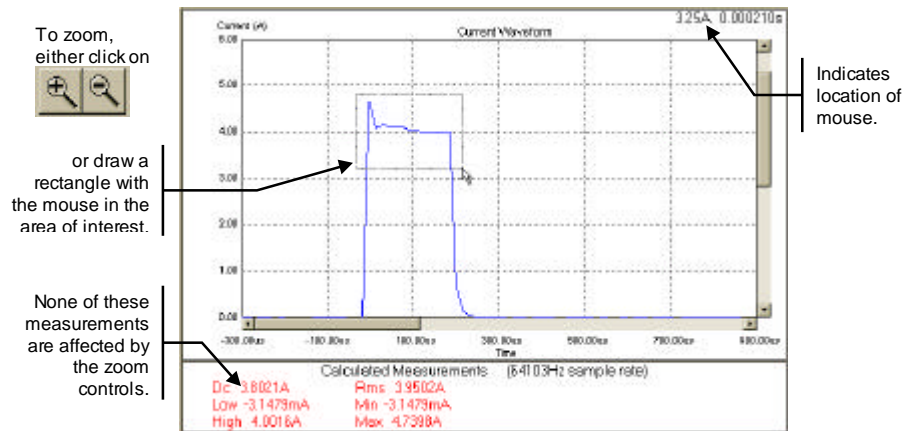
Performing Measurements on Waveforms

Use the marker controls to make precise waveform measurements.

— To view the horizontal and vertical markers, click on the marker buttons on the toolbar. Use the mouse to position the marker.

To display markers, click on

Move Y2 marker to top of waveform.

Move Y1 marker to bottom of waveform.

Move X2 marker to left side of area of interest.

Move X1 marker to right side of area of interest.

Calculated values are based on data **between** X1 and X2 markers

Displays the location of all markers and the separation between them.

You can also zoom in on a specific area of the waveform. Zooming in only rescales the display, no calculations are performed in the zoom area.
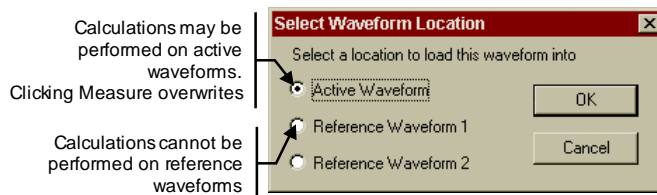
— To zoom in on a specific area on the display, use either the zoom in button on the toolbar, use the mouse to draw a rectangle on the display.

— To zoom out, use either the zoom out button or place the cursor in the display area and right-click on the mouse. Then select **Zoom Out**.

To zoom, either click on

or draw a rectangle with the mouse in the area of interest.

None of these measurements are affected by the zoom controls.

Indicates location of mouse.

Placing a Waveform on the Display

Up to two reference waveforms can be shown on the display along with the measured or active waveform. This is useful if you want to compare waveform measurements to a "standard" or reference waveform to make a pass/fail determination on the measurement. Waveforms are displayed in different colors, which can be edited by selecting Edit/Preferences. Measurement calculations can only be done on active waveforms, not reference waveforms.

— Select the **Load Waveform** command in the File menu to load a waveform.

— Enter the filename of the waveform in the Open dialog box. The default location for waveforms is **C:\ Program Files \ HP14565dcs**.

— Select **Active Waveform** in the Select Waveform Location dialog box only if you want to perform measurements on the loaded waveform.

Calculations may be performed on active waveforms. Clicking Measure overwrites

Calculations cannot be performed on reference waveforms

— Use the **Remove Waveform** command in the **File** menu to remove a loaded waveform from the display.

Removing a waveform does not delete the waveform file.
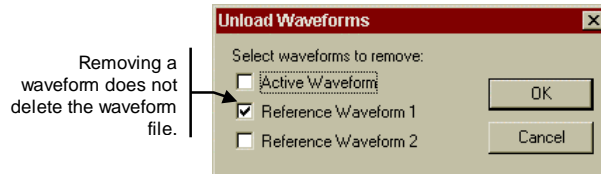
Printing and Saving Measurement Data

The HP 14565A application supports printing and print previewing of the display. Use the **Print Preview** command in the File menu to preview the display. Use the **Print** command to print the display to your default printer.

Use the **Save Waveform** command in the File menu to save the voltage or current measurement data to an ASCII text file that you specify in the Save As dialog box. All of the data points that comprise a waveform are logged in a 2-column Time/Voltage or Time/Current format. The information can be imported into a database or spreadsheet, or edited by a text editor. This is useful if you need to create a reference waveform that you would normally not be able to create by just taking a measurement.

Advanced Measurement Settings

To configure output measurements, select the **Measurement Settings** command in the Source menu.

Selects high or low range current measurements.

Selects the windowing function for measurement calculations. Refer to the on-line help for more information.

Selects the current tupe. Use Pulse for waveforms. Refer to the on-line help for more information.

Configure Measurements

Current Range
- ○ Low (<0.02A)
- ● High Range

Sense Window
- ● Rectangular
- ○ Hanning

OK
Cancel

Current Type
- ● Pulse
- ○ DC only

Display Preferences

To configure display preferences, select the **Preferences** command in the Edit menu.

Displays Min, Max, High and Low waveform markers.

Displays gridlines.

Specify update rate of voltage and current meters

Returns the settings to the factory default

Use these controls to select and change waveform colors.

Preferences

Waveform Display
- ☑ Show Calculated Value Markers
- ☑ Show Grid

OK
Cancel
Reset

Meter Polling Interval
2

Display Colors
Active waveform   Color..

Text Color

Source Settings

To display the protection settings of the dc source that is presently being controlled, select the **Source Settings** command in the Source menu.

Enables overcurrent protection and sets overcurrent protection delay.

Save or recall instrument states in non-volatile memory.

Displays overvoltage limit settings.

Source Settings

Over Current Protection
- ☐ Enable OCP

OCP Delay: 0.008 sec

OverVoltage Limit:
22

OK
Cancel

Store/Recall States

State
0

Save
Recall

☑ Recall State 0 at power-on

Voltage ALC Bandwidth:
Normal

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Sample Waveforms

Several sample waveforms are provided with the HP 14565A application. If you do not have a dc source connected to your PC, you can still become familiar with the application by trying out the various display functions using the sample waveforms.

DemoWaveform1.txt

This waveform is a single transmit current pulse from a cellular phone. It clearly shows the location of the Max, High, Min, and Low measurement points.

DemoWaveform2.txt

This waveform is also a single transmit current pulse from a cellular phone. Its main features are the multiple low-level signals. Note that the High and Low levels of the waveform are based on the two portions of the measurement (out of a total of 1024 equally divided portions), that have the most high or low points - and that include at least 1.25% of the total measurement points.

DemoWaveform3.txt

This waveform includes three transmit current pulses from a cellular phone. Note that in this case, the High and Max values are the same. This is because no portion of the measurement above the 50% point includes at least 1.25% of the total measurement points.

Warranty

This Hewlett-Packard software product is warranted against defects in materials and workmanship for a period of 90 days from date of delivery. During the warranty period, Hewlett-Packard Company will, at its option either repair or replace parts which prove to be defective.

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The foregoing warranty shall not apply to defects resulting from: misuse, unauthorized modification, operation or storage outside the environmental specifications for the product, in-transit damage, improper maintenance, or defects resulting from use of non-HP software, accessories, media, or such items not designed for use with the product.

Notice