Metrics ICS Driver Manual

AT4285

Metrics ICS

Version 4.5

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The Agilent AT4285 Instrument Driver

Getting Started: Creating and Executing a Test Setup

This section will walk you through the steps required to create and execute a sample test setup. This sample test setup will measure gate capacitance, Cg, of a transistor as a function of voltage. This characteristic was measured with the Agilent 4285 Precision LCR Meter and the HP16442A Test Fixture.

Step 1: Connect a Test Fixture or Cable Set to the Instrument

The capacitance example presented in this section was performed with the HP16442A Test Fixture. Connect either the HP16048A Test Leads or a compatible four-terminal pair cable set to the instrument UNKNOWN terminals.

The cable length must be designated in the instrument configuration CABLE LENGTH field in order to assure stable and accurate measurements. The CABLE LENGTH field is located under the Agilent 4285 Configuration Settings dialogue box (See Step 3, below).

Set the CABLE field designation to "0m" if you are using the HP16442A or any other test fixture that connects directly to the instrument UNKNOWN terminals. If using standard length test cables, set the CABLE field designation to "1m", "2m", or "4m" as appropriate. Any other cable length will induce inaccuracies that must be accounted for. Refer to the Agilent 4285 Operation Manual to review the cable length selection procedure.

Step 2: Connect the 4284's Instrument Driver

The AT4285 Driver is connected to ICS in the Connect Instruments dialogue box. The Connect Instruments dialogue box is accessed by choosing the CONNECT INSTRUMENTS toolbar button or by selecting INSTRUMENTS/SELECT INSTRUMENT from the main menu bar.

How to Connect the AT4284 Driver:

1. Click the CONNECT INSTRUMENTS toolbar button or select INSTRUMENTS/SELECT INSTRUMENT from the measurement mode menu bar. This will open the Connect Instruments dialogue box.
2. Highlight the AT4285 Driver in the AVAILABLE field.
3. Click the CONNECT button.
4. Your choice will be displayed in the SELECTED field.
5. Clicking the OK button would close the Connect Instruments dialogue box and restore control to the ICS desktop. Keep the Connect Instruments dialogue box displayed for now, because the next step requires you to click the Connect Instruments CONFIG button.

Step 3: Designate the GPIB Address and Options Status

Connect the Agilent 4285 instrument to your computer using a standard IEEE-488 GPIB (General Purpose Interface Bus) as described in the Agilent 4285 Operation Manual. The HP-IB hardware discussed in the Operation Manual is Hewlett-Packard's implementation of the IEEE-488 Standard Digital Interface for programmable instrumentation. Please refer to the Agilent 4285 Operation Manual to review the HP-IB cable length limitations and connection restrictions recommended by Agilent Technologies.

The 4285 Configuration Settings dialogue box is used to designate the instrument's GPIB address and Cable Length. The Configuration Settings dialogue box also reports the installed Options.

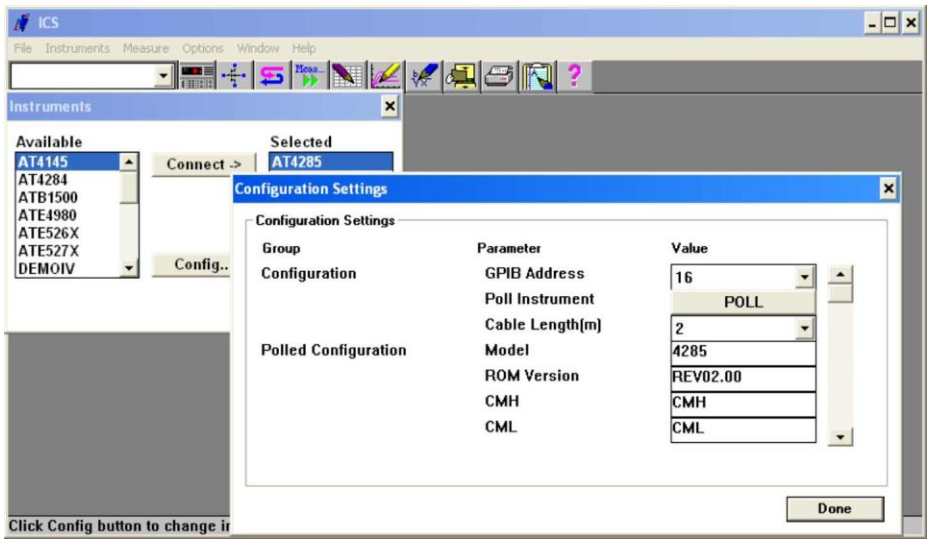


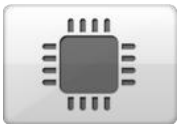
Figure 1: How to Define the 4285 GPIB Address and Cable Length

How to Designate the 4284 GPIB Address and Cable Length:

1. The Connect Instruments dialogue box should still be displayed from the last step. If it isn't, click the toolbar CONNECT INSTRUMENTS button or choose INSTRUMENTS/SELECT INSTRUMENT from the main menu bar. This will re-open the Connect Instruments dialogue box.
2. Open the 4285's Configuration Settings dialogue box by clicking the CONFIG button at the bottom of the Connect Instruments dialogue box.
3. Select the 4285's GPIB address in the GPIB field. The GPIB address is designated in the System Configuration page under the SYSTEM menu. If you wish to change the GPIB address, please refer to procedure outlined in the 4285 Operation Manual.

Step 4: Create the Test Setup

Test setups are created in the Setup Editor. Open the Setup Editor by selecting the SETUP EDITOR button. This example will demonstrate how to create a test setup that measures the capacitance, Cg, of a transistor as a function of voltage.



Click the corresponding toolbar button to display the Setup Editor.

Step 4A: Specify the Test Setup Name

When creating a new test setup, a test setup name must be specified before any other selections or conditions are designated.

How to Specify the Test Setup Name

1. Click the Setup Editor NEW button. This will open the New Setup dialogue box.
2. At the prompt, specify a test setup name. For this example, type "Cgate".
3. Click OK. This will close the New Setup dialogue box.
4. The test setup name will appear in the Setup Editor SETUP window.

Step 4B: Select a Device Schematic Corresponding to the DUT

A device schematic is located at the center of the Setup Editor. ICS provides a library of different device schematics. Select a schematic that is a representation of the DUT.

The device schematic does not have to match the pin layout of the Device Under Test. The device schematic is provided as a convenience for the user so that the user can document the terminal connections required for the corresponding test setup.

A MOSFET schematic will appear at the center of the Setup Editor when the Setup Editor is first opened. In this step the MOSFET schematic will be replaced with a CAP schematic. The MOSFET device is the default Setup Editor schematic. To change the default device schematic, refer to *Chapter 2: The Setup Editor*.

How to Select a Device Schematic:

1. Click the Setup Editor DEVICE button. This will open the Device dialogue box.
2. The Device Type window will display a list of available device schematics. Select "CAP". Notice the selected schematic is previewed in the small window to the right of the Device Type window.
3. Click OK. This will close the Device dialogue box and display the capacitor schematic at the center of the Setup Editor.

Step 4C: Designate the Instrument/DUT Connections

The connections between the instrument UNKNOWN terminals and the device under test are designated in the Setup Editor. The Setup Editor display is provided as a tool to document the test fixture or test lead connections required for the corresponding device measurement. The connections designated in the Setup Editor must correspond to the orientation of the DUT in the test fixture or the connections between the DUT and the instrument test leads.

The Setup Editor should display a device schematic that is representative of the DUT (refer to the last step, if necessary). Connections are designated by first clicking either the "CMH" or "CML" source listed in the Source Units dialogue box. After the source is selected, click the blue pad next to one of the device schematic pins. An instrument icon, along with the name of the connected source, will appear above the device schematic pin as a means of indicating the connection.

How to Designate the Instrument/DUT Connections:

1. Select the Setup Editor SOURCES button. This will open the Source Units dialogue box.
2. The Source Units dialogue box will display two sources. One of the sources is designated "high" and the other "low" (AT4285.CMH and AT4285.CML respectively).
3. Click on the "AT4285.CMH" designation.
4. Designate the intended orientation of the DUT in the HP16442A Test Fixture by clicking the blue pad next to the emitter.
5. Select the "AT4285.CML" designation and click the blue pad next to the base. An instrument icon will appear above both designated connections.
6. Close the Source Units dialogue box by clicking the "DONE" in the upper left-hand corner of the dialogue box.
7. If an incorrect DUT connection is mistakenly designated, un-designate the connection as described in *Chapter 2, Removing Instrument/DUT Connections.*

Step 4D: Specify the Setup Configuration of the Instrument

The measurement configuration of the 4285 is controlled from the 4285 Setup dialogue box. The 4285 Setup dialogue box is opened by clicking the instrument icon next to the "CMH" connection.

In this example, the 4285 will source a 0.025V 100kHz signal while applying a voltage sweep across the gate of a MOS transistor. The voltage bias will sweep from -0.0V to 1.0V and consist of 31 data points. Capacitance (C) and bias voltage (V) will be returned as data.

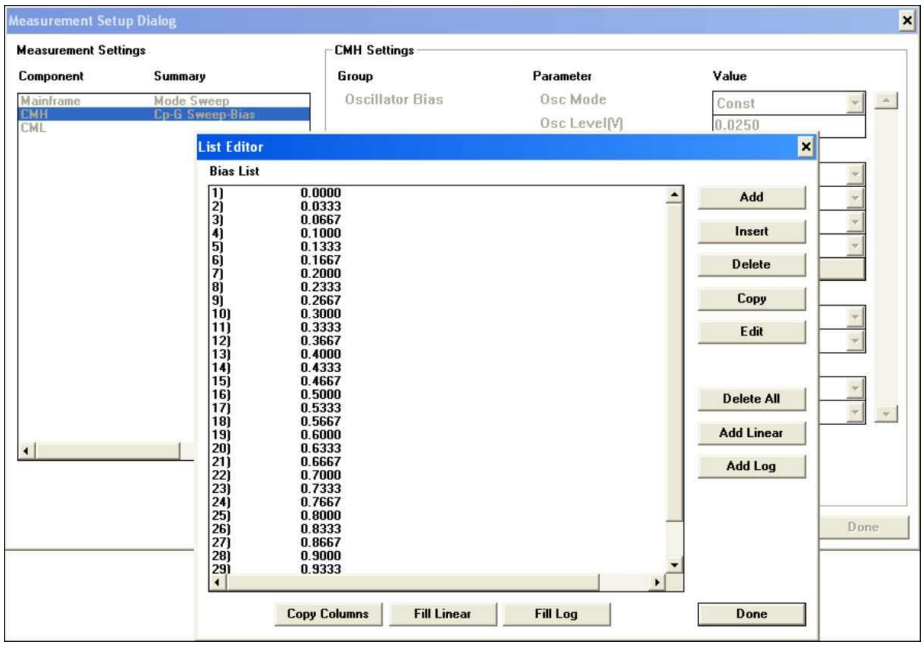


Figure 2: E4285 Setup Configuration for the C_{ibo} Test Setup

How to Specify the Instrument Setup Configuration:

1. Click once on the "CMH" instrument icon to open the 4285 CMH Settings dialogue box.
2. Configure the controls as shown in Figure 2. Use the mouse or TAB key to move between the different switches and fields.
3. Click OK to close the 4285 Setup dialogue box.

Step 5: Calibrate the Instrument

The parasitic effects of the test fixture introduce device measurement inaccuracies. To eliminate this problem, the 4285 includes an Open and Short Correction function that compensates for the LCR characteristics inherent to the test fixture. The correction functions are controlled from the Calibration dialogue box. Calibrate the instrument as described below.

How to Calibrate the 4285:

1. Open the Setup Editor and create a measurement.
2. Calibrate dialogue box by clicking the Setup Editor OPTIONS or Click the Mainframe option in the Measurement Setup Dialog box. Click the Show Advanced button.
3. Make certain that no device is inserted in the test fixture. Click the "Open Corr. State" button to set the OPEN Correction state. The State can be observed on the front of the instrument. Click the RUN button for Open Measure. The 4285 will perform the open correction. A banner will remain displayed on the 4285 instrument's screen while the Open function is performed.
4. After completing the Open Correction function, short the test fixture HIGH and LOW terminals. Click the "Short Corr. State" button to set the SHORT Correction state. The State can be observed on the front of the instrument. Click the RUN button for Short Measure. The 4285 will perform the short correction.
5. The instrument is successfully calibrated. Remove the short between the test fixture HIGH and LOW terminals. Click the DONE button to restore control to the Setup Editor.

The procedure outlined above is a presentation of the minimal calibration requirements necessary for the C measurement specified in the example test setup. For a thorough discussion of the calibration functions, refer to *The 4285 Calibration* later in this chapter.

Step 6: Insert the DUT into the Test Fixture

Insert the DUT into the test fixture sockets according to the DUT connections designated in the Setup Editor. For the C_{ibo} measurement described in this section, insert the device so that the Gate is connected to the HIGH terminals of the 4285. Connect the substrate to the LOW terminals.

Step 7: Execute the Measurement

Execute the test setup by clicking the toolbar MEASURE button. This will cause a window to open that contains the "Measurement Remote Control". Click the single button to start the measurement.

Step 8: View the Results

Data is automatically written to the corresponding data window spreadsheet each time the measurement is executed. To display the numerical data, double-click on the white spreadsheet icon labeled Cgate at the bottom of the ICS desktop. The spreadsheet was created after the Cgate test setup name was specified in the Setup Editor, but it contained no data.

Data window spreadsheets are dynamically linked to the test setup. Each time the corresponding test setup is executed, the spreadsheet data is replaced with the most recently measured data. For this reason the data window spreadsheet is automatically named the same as the test setup.

Step 9: Create a Plot of the Results

A plot window is dynamically linked to a corresponding data window spreadsheet. This means that the plot is regenerated any time there is a change to the corresponding spreadsheet data. If the test setup is executed more than once, the plot window is regenerated after each measurement. If the data window spreadsheet is edited, the plot window is updated by clicking the REDRAW button at the top of the spreadsheet. Up to ten plots can be created from a single data window spreadsheet, and each plot can be independently formatted.

The steps below will show you how to create a plot of C_{ibo} with respect to the voltage sweep.

How to Create a Plot

1. If there is more than one defined test setup, designate the active test setup in one of two ways:
2. Click once on the appropriate data window spreadsheet icon. Clicking once on a data window spreadsheet icon will display a system menu. Ignore this display and proceed with Step 4.
3. Click the toolbar setup window arrow and select the desired setup from the displayed drop-down list.
4. Click the NEW PLOT toolbar button. This will open an empty plot window and the Plot Data dialogue box.
5. Designate the independent variable of the plot by double-clicking on the appropriate data vector listed in the Data window. Two quantities were measured in the C_{ibo} test setup: capacitance and voltage. There should be two data vectors in the dialogue box Data window: "CPA" and "Bias" (according to the data vector labels specified in Figure 2). This example will create a plot of capacitance with respect to the voltage sweep. Since voltage will be the independent variable, select "Bias" for the X-axis.
6. Designate a dependent variable by selecting “CPA” in the dialogue box for the Y1-axis.
7. Click the dialogue box APPLY button. This will create the plot but will not close the Plot Data dialogue box.
8. Click the Done button to close the Plot Data dialogue box

Step 10: Save the Results into a Project File

A project file includes all of the information necessary to execute a test setup or group of test setups. A single project file includes: 1) the instrument driver selection, 2) any defined test setup(s), and 3) all of the data and plot windows associated with the test setup(s). For more information about project files, refer to *Chapter 1: How ICS Stores Information*.

The AT4285 Configuration Dialogue Box

The AT4285 Configuration dialogue box identifies the instrument GPIB address, the Cable Length, and the model number and position of each plug-in module installed in the AT4285 mainframe.

The AT4285 Driver must be connected to ICS before the Configuration dialogue box can be opened. If necessary, refer to *Step #2, Connecting the AT4285 Instrument Driver*. After connecting the AT4285 Driver, the AT4285 Configuration dialogue box can be opened from the Connect Instruments dialogue box.

Open the Connect Instruments dialogue box by clicking the corresponding toolbar button. Open the AT4285 Configuration dialogue box from the Connect Instruments dialogue box by clicking the Connect Instruments CONFIG button.

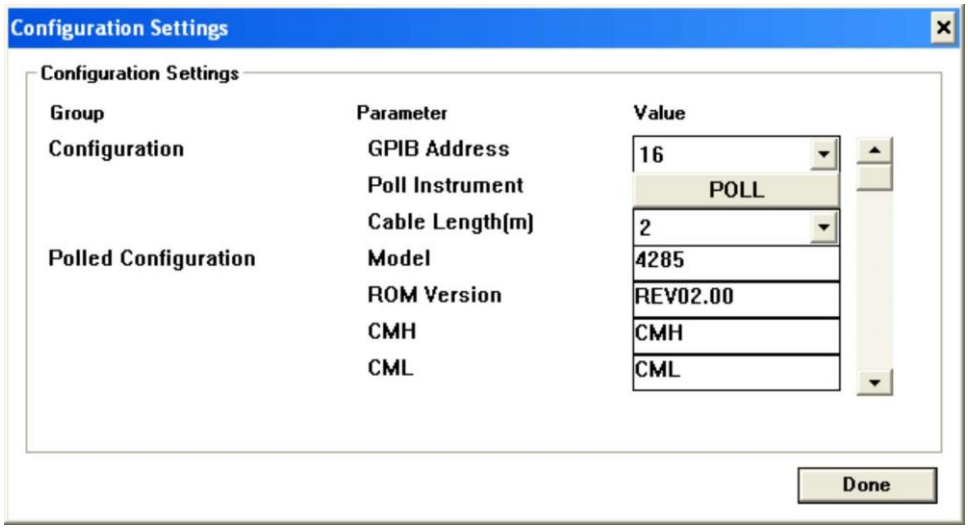


Figure 3: Open the AT4285 Configuration Dialogue Box from the Connect Instruments Dialogue Box.

Source Unit Fields and Labels

The AT4285 Configuration dialogue box includes source unit fields corresponding to the options available in the AT4285 mainframe. Each source unit field is used to identify the hardware installed at the corresponding mainframe slot. When a user designates source units later in the application, each instrument module will be identified by the corresponding Unit label designated in the Value column of the AT4285 Configuration Settings dialogue box.

Configuring the Instrument GPIB Address and Module Identities

The AT4285 Configuration dialogue box is configured by first designating the instrument GPIB address and then clicking the POLL button at the top of the dialogue box. The POLL function interrogates the instrument and automatically identifies the modules installed at each slot position.

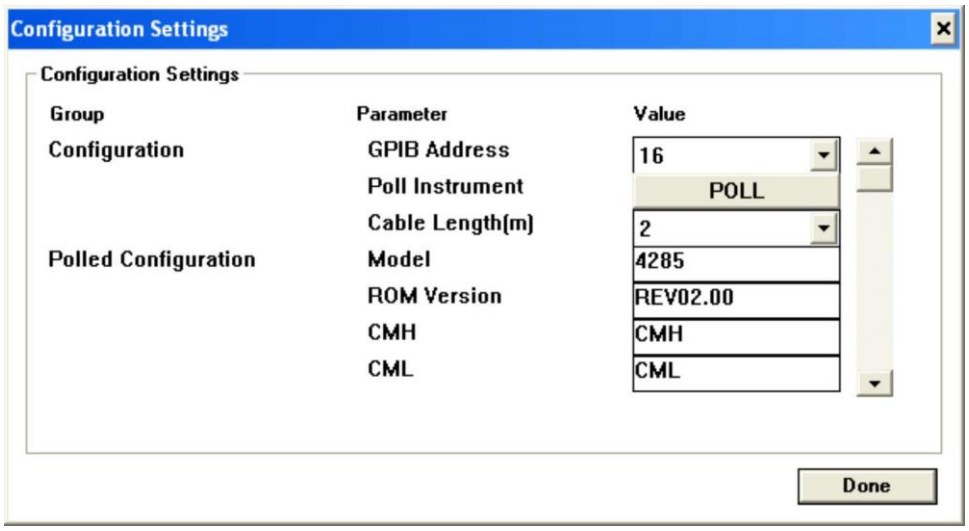


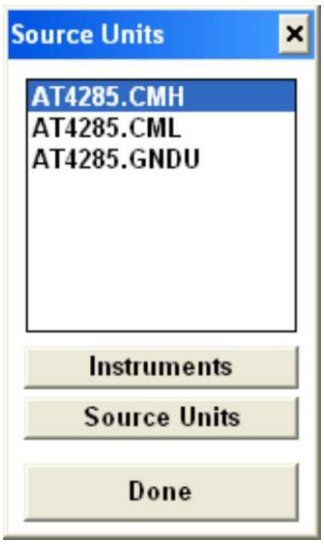
Figure 4: The AT4285 Configuration Dialogue Box.

Polling Errors and Warnings

ICS will display a short sequence of error messages if the GPIB card times-out after attempting to locate the instrument on the GPIB bus. (The time-out limit is designated in the GPIB Setup dialogue box. The GPIB Setup dialogue box is opened by selecting INSTRUMENTS/GPIB SETUP from the measurement mode menu bar.) The GPIB card will time-out if the instrument is OFF, if the instrument is not connected to the GPIB cable, or if the instrument is in a state that it cannot respond. If the instrument is connected to your computer through a daisy-chain of GPIB cable connections, each instrument in the cable path must be turned ON.

When to Update the AT4285 Configuration Dialogue Box

It is only necessary to configure or update the AT4285 Configuration dialogue box when either of two situations occur:



1. The AT4285 Driver is connected to ICS for the first time.
2. The AT4285 module configuration is altered or the instrument GPIB address is changed.

The information displayed in the AT4285 Configuration dialogue box is stored in memory when the user manually specifies the box contents or after the user polls the instrument. The AT4285 configuration is written to the ICS35.INI file as soon as the OK button is selected in the Configuration dialogue box. The AT4285 Driver connection is documented in the corresponding project file when FILE/SAVE or FILE/SAVE AS is selected. When the project file is opened, ICS will automatically connect the AT4285 Driver and arrange the AT4285 Configuration dialogue box according to the designations recorded in the ICS.INI file. This eliminates the need to repeatedly connect the AT4285 Driver or arrange the Configuration dialogue box each time an AT4285 project file is opened. After initially arranging the AT4285 Configuration dialogue box, there is no need for the user to review the dialogue box unless the module configuration is altered or the instrument GPIB address is changed.

Source Unit Availability

The SOURCE UNITS dialogue box contains a list of available instrument modules that can be used to build a test setup. The contents of this dialogue box represent the instrument modules installed in the AT4285.

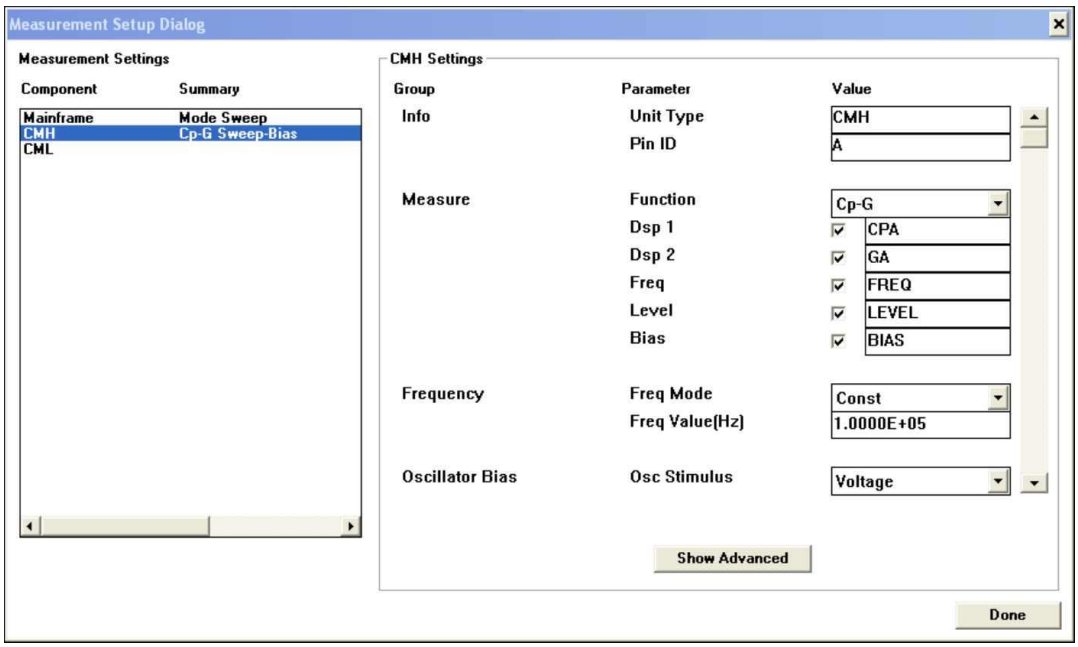
The SOURCE UNITS includes the CMH, CML, and GNDU sources.

CMH is the Hpot and Hcur side of the outputs on the 4285.

CML is the Lpot and Lcur side of the outputs on the 4285.

GNDU is the ground connection on the instrument.

The Measurement Setup Dialogue Box



The setup conditions of each source unit are independently controlled with the Measurement Setup dialogue box. There is a Settings dialogue box that corresponds to each AT4285 module. The AT4285's Measurement Setup dialogue box is accessed from the Setup Editor.

Once the Measurement Setup Dialogue box is opened, all features of the instrument (including Mainframe Setup options) can be accessed. This is different from other ICS drivers which require the opening of several dialogue boxes to perform these functions.

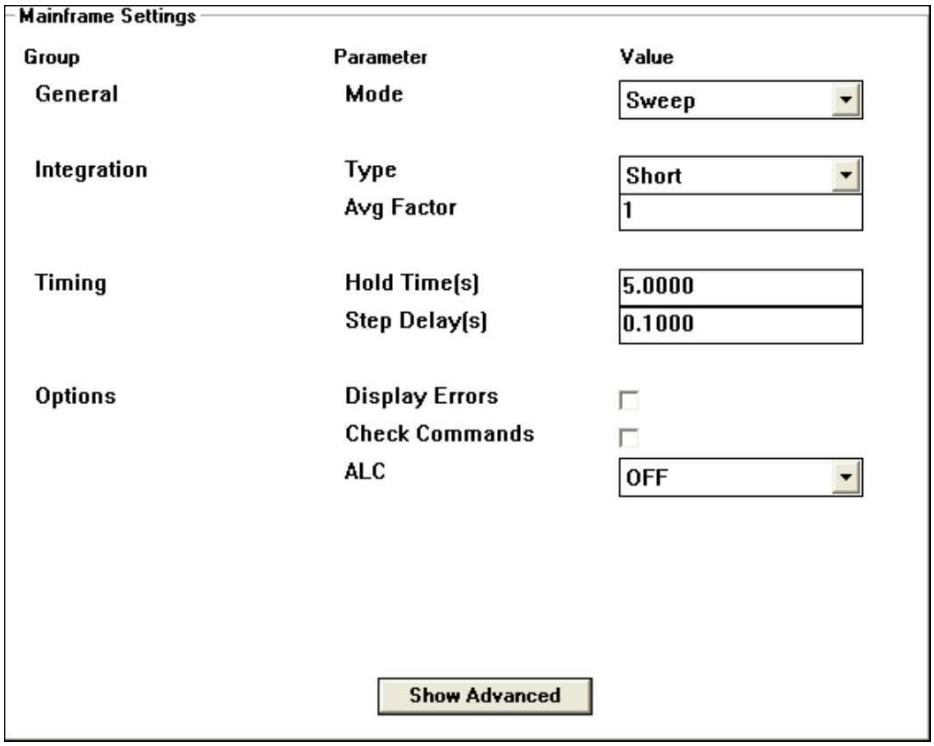
How to Display the Measurement Setup Dialogue Box:

In order to display the Measurement Setup dialogue box, the corresponding source must be assigned to a DUT pin represented by the device schematic.

1. Click once on the instrument icon to open the Measurement Setup dialogue box.
2. Click once on the desired source unit listed in the Measurement Settings area of the Measurement Setup Dialogue box.
3. The settings for the selected SMU will appear in the right side of the Measurement Setup Dialogue box.

The Mainframe Setup Dialogue Box

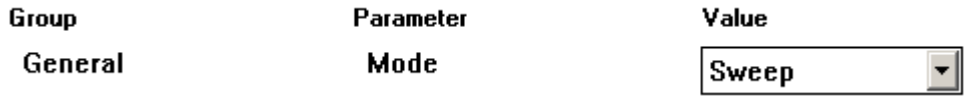
Clicking the OPTIONS button in the Setup Editor will open the AT4285 Mainframe Setup dialogue box. The AT4285 Mainframe Setup dialogue box includes the controls necessary to specify the mode, integration, options, timing, and compensation.



The contents of the AT4285 Mainframe Setup dialogue box are global to every module in the test setup. The AT4285 mainframe options are only applied to the test setup in which they were specified. Once a new test setup is defined, the mainframe options can be re-specified without changing the configuration of the mainframe options in a previously defined test setup.

The AT4285 Mainframe Setup dialogue box is displayed by clicking the Setup Editor OPTIONS button after first designating at least one Source Unit/DUT connection.

Mode

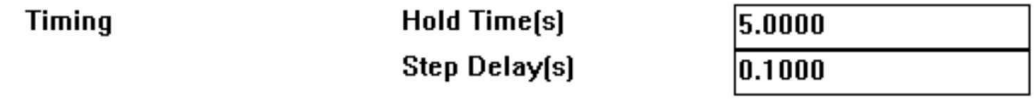


The Mode setting allows the user to select the way that the instrument will be used. Selecting the Mode allows the driver to simplify the CMU configuration windows. Further description of the Mainframe Modes is found in "The 4285 Mainframe Modes".

Integration Controls

The Sweep Source Integration Controls specify the type and number of samples to be used for every returned data point.

Timing Controls



The Timing Controls specify the timing configurations of the source signal. Values entered in the sweep source timing fields are interpreted in units of seconds.

Hold Time

The Hold Time is the length of time the AT4285 will wait while allowing the starting value of the source signal to settle. The hold time is only applicable to the initial application of the signal.

Step Delay

The Step Delay is the length of time the AT4285 will wait between each step in a sweep.

Options

The Options Group contains specialized functions for the AT4285 mainframe. The options are listed below.

Display Errors

This option when selected will force the software to report any error condition reported by the instrument, including Compliance.

Check Commands

This option forces the software to make a secondary verification of all commands sent. This is accomplished by sending GPIB commands to check for errors after EVERY GPIB command. This will slow the instrument performance down and is recommended only when working with Metrics Technology to resolve an instrument error.

ALC

The ALC function implements a closed-loop feedback circuit that forces the test signal level at the DUT to the level designated with the oscillation controls. This capability eliminates any unwanted test signal variations as seen by the DUT. The ALC function limits the range of the oscillator level. Refer to the HP4285 Operation Manual for a presentation of the oscillator level range available with the use of the ALC function.

Open/Short Correction Controls

The parasitic effects of the test fixture or test leads introduce device measurement inaccuracies. To eliminate this problem, the 4285 includes two calibration functions that compensate for the LCR characteristics inherent to the test fixture or leads: Open Correction and Short Correction.

The Open function cancels errors due to the stray admittance in parallel with the device under test. The Short function corrects for the residual impedance in series with the device under test.

Each calibration function must be performed individually. You cannot perform more than one calibration method at a time. To perform a calibration function, designate the desired calibration method by selecting the corresponding button. The Calibrate dialogue box will remain displayed throughout the calibration process. After the calibration method is complete, the corresponding switch will remain selected as an indication that the calibration method was performed.

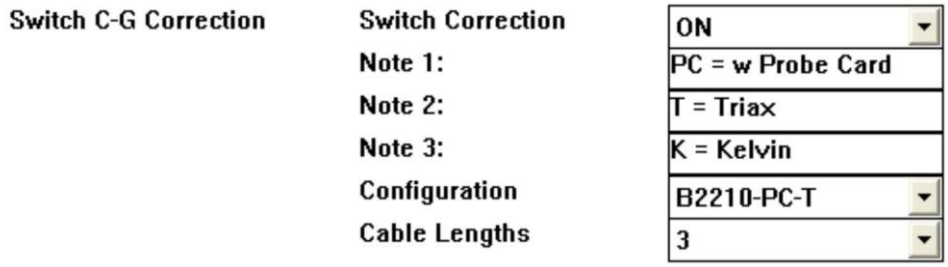
How to Calibrate the 4285:

1. Open the Calibrate dialogue box by clicking the Setup Editor OPTIONS button. Click the Show Advanced button to display the calibration options.
2. If you wish to perform the Open function, make certain that there is no device inserted in the test fixture. Click the Open Corr State button to

set the Open function to ON. This can be verified by looking at the front panel of the instrument. Click the Run button to perform the correction. If you wish to perform the Short function, short the test fixture HIGH/LOW terminals. Click the Short Corr State button to set the Short function to ON. This can be verified by looking at the front panel of the instrument. Click the Run button to perform the correction. The Calibrate dialogue box will remain displayed while the calibration function is performed. The designated switch will remain selected after the calibration function is completed.

3. The instrument is successfully calibrated. At the end of each calibration function, ICS will automatically configure the instrument to enable the correction calculations for subsequent measurements.

Switch Compensation Controls



The Switch C-G Correction Controls allow the user to select an Agilent produced correction to the measured data. This function is only applicable for the Mainframe Mode of SWEEP and requires the measured data to be C-G.

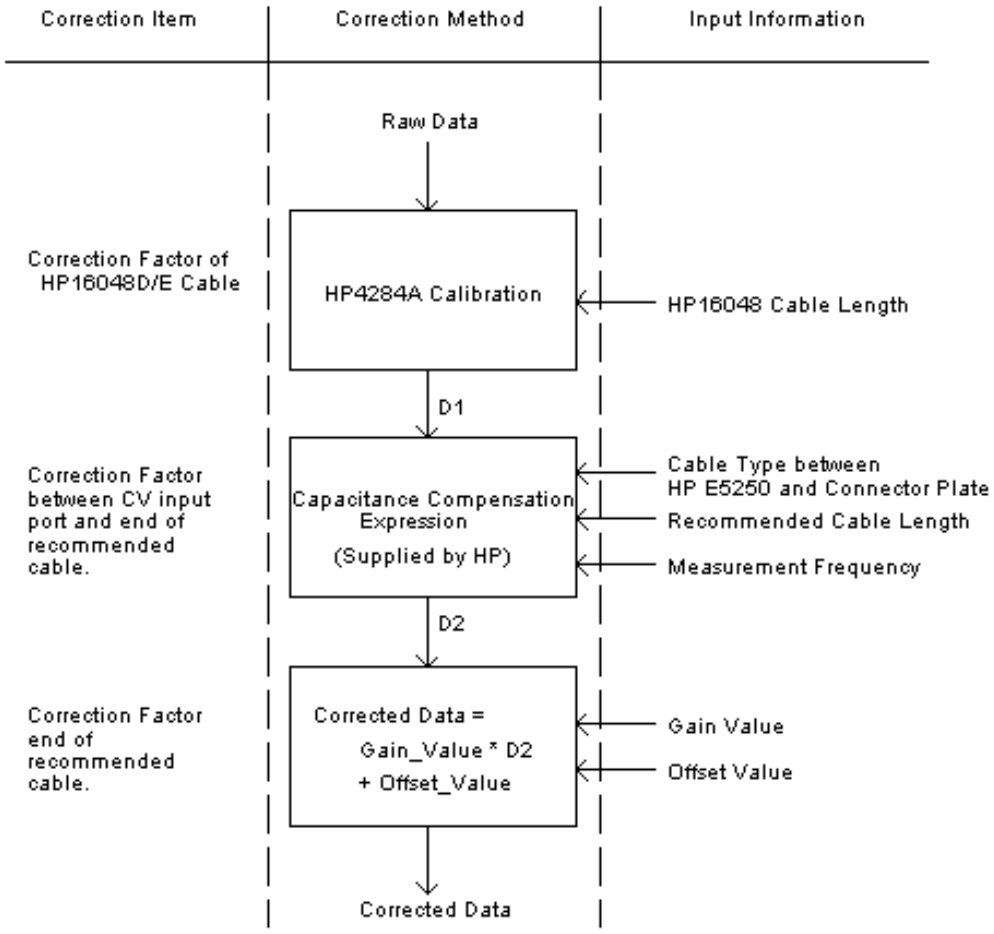
Turning the Switch Compensation on allows the user to setup C Compensation features through the Agilent E5250 or B220X switch matrix when measuring parallel C-G with the 4285. The Switch Compensation Model is only valid when used in the Compensation Model Environment.

How to Configure Switch Compensation:

1. Open the Switch Compensation dialogue box by clicking the Setup Editor OPTIONS button. Click the Show Advanced button to display the calibration options.
2. Enable the Compensation feature by selecting Switch Correction to ON.
3. Select the Switch Card Type, Interface Type, and Cable Type combination that matches your system from the pull-down list.

4. Select the cable length for the cables connected from the HP E5250 or B220X outputs to the probes.

Compensation Model



Note: In this model the 4285 can be substituted for the 4285 or E4980.

Acquiring User Compensation Coefficients

User Compensation may be used to correct for Probe Cards, Device Sockets, and other connectors used after the coax cables.

How to Acquire User Compensation Coefficients:

1. Setup the Capacitance measurement conditions in the 4285 with Switch Compensation enabled using the default A and B factors.
2. Setup measurement path.
3. Remove the device on the test fixture and measure the capacitance value with the default A and B factors.
4. Attach a device with a known capacitance value and measure the capacitance with the default A and B factors.
5. Calculate the A and B factors:

A = <known cap value> / (<measured value from #4> - <measured value from #3>)

B = -1 * <known cap value> * <measured value from #3> / (<measured value from #4> - <measured value from #3>)

User Compensation Controls

How to Configure User Compensation:

1. Open the User Compensation dialogue box by clicking the Setup Editor OPTIONS button. Click the Show Advanced button to display the calibration options.
2. Enable the Compensation feature by selecting User Compensation to ON.
3. Enter the A and B values as determined by the method earlier.

The 4285 Mainframe Modes

The AT4285 driver allows the setup of the instrument into specific modes. These modes allow for easier setup of the test by removing options that are not applicable for a specific test method. This section of the manual describes the Mainframe Modes and the CMU setups allowed, respectively.

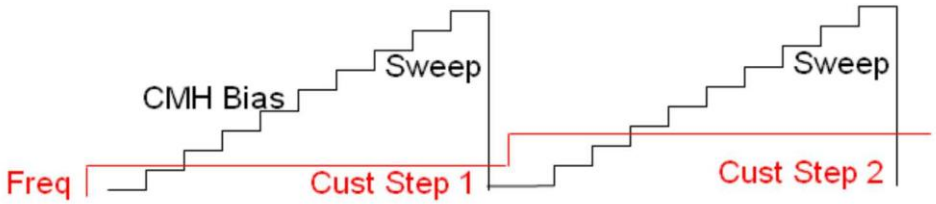
Mainframe Mode	CMH Bias/Freq/or Osc Mode			
		Const	**Sweep**	**Custom Step**
	Sweep Mode	*	*	*
	Spot Mode	*	*	*
	Custom Sweep Mode	*	*	*
	ICS Time Mode	*	*	*
	Sampling Mode	*	*	*
	Stress Mode	*	*	*

The 4285 instrument has several different sources that can be varied during a measurement. These sources are the Frequency, Oscillator Amplitude, and Bias.

- One source can be swept during a measurement.
- Other sources must be constant.

To create a "Family of Curves" use the Custom Step to change the values of the sources that are not being swept. A sample would be to perform a Bias sweep (CMH) at several different frequencies. To do this:

1. Set the Mainframe Mode to Sweep.
2. Set the CMH Bias sweep points.
3. Set the Oscillator Bias.
4. Set the Oscillator Frequency to Custom Step and select the series of frequencies.

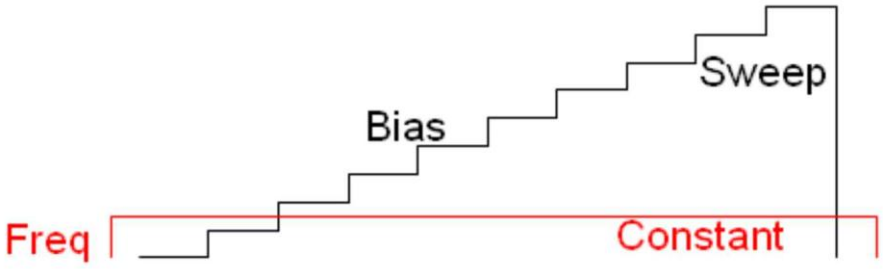


When the test is run, the following process will occur.

1. The first frequency will be programmed to the instrument along with the Oscillator Bias.
2. The CMH will then be swept through the list of biases.
3. The Oscillator will be set to the second frequency in the list.
4. The CMH will be swept through the same list of biases as in step 2.
5. The oscillator will be set to the next frequency and the process repeats.

Sweep Mainframe Mode

The Sweep Mainframe mode is the mode for most measurements that require the sweep of one of the device terminals. One of the CMU's values must be set in Sweep Mode and the remaining can be setup in Constant, or Custom Step Mode.

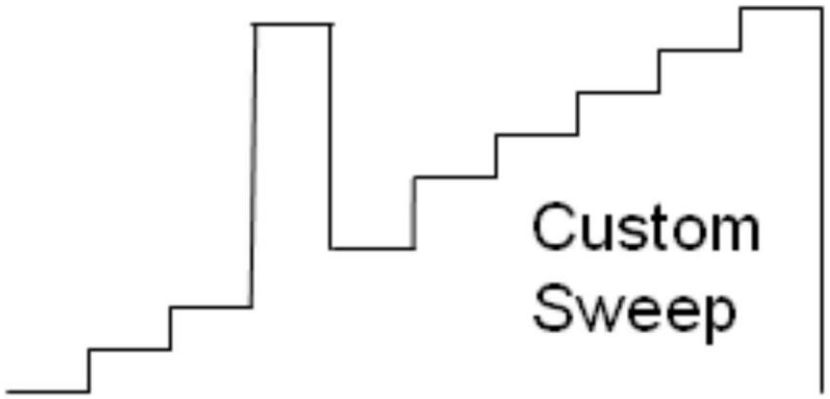


Spot Mainframe Mode

The Spot Mainframe mode is the mode for measurements that test only a single bias point of the device terminals. All of the CMU's values must be set in Constant Mode.

Custom Sweep Mainframe Mode

The Custom Sweep Mainframe mode is the mode for applying a sweep that is a non-standard set of points that cannot be simply defined as Start, Stop, and Number of Steps. One of the CMU's inputs must be set in Custom Sweep Mode and the remaining can be setup in Constant or Custom Step Mode.

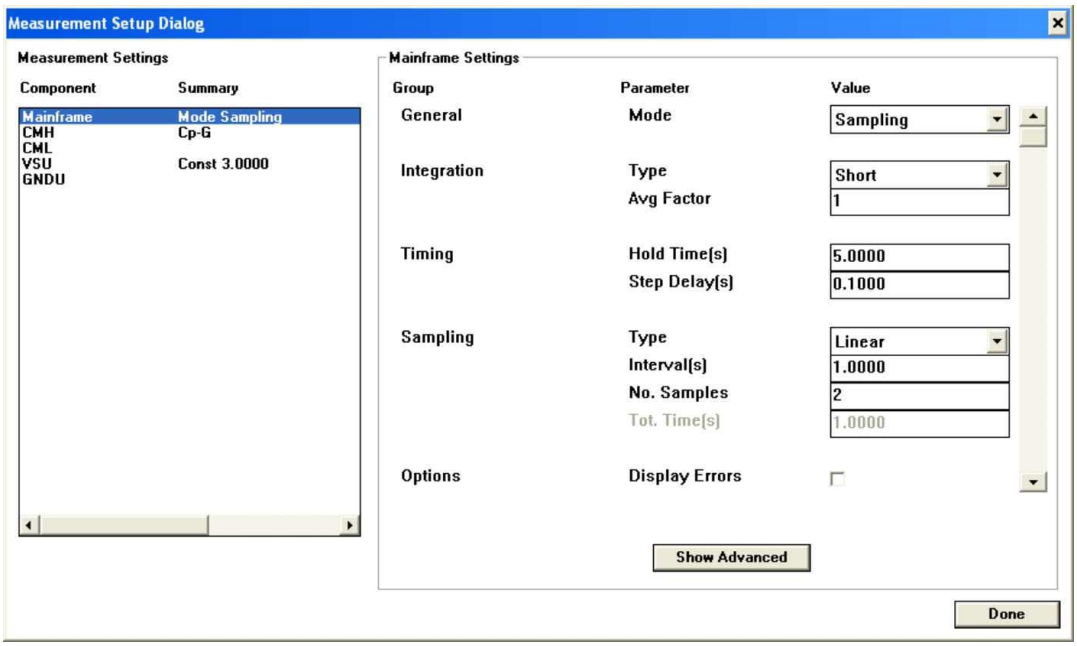


ICS Time Mainframe Mode

The ICS Time Mainframe mode allows the test setup to be created exactly like the older versions of ICS. **If you are not using an old project, use the Sampling Mode instead**. A constant bias is applied while the DUT is measured at specified time intervals. All of the CMU's inputs must be set in Const Mode.

Sampling Mainframe Mode

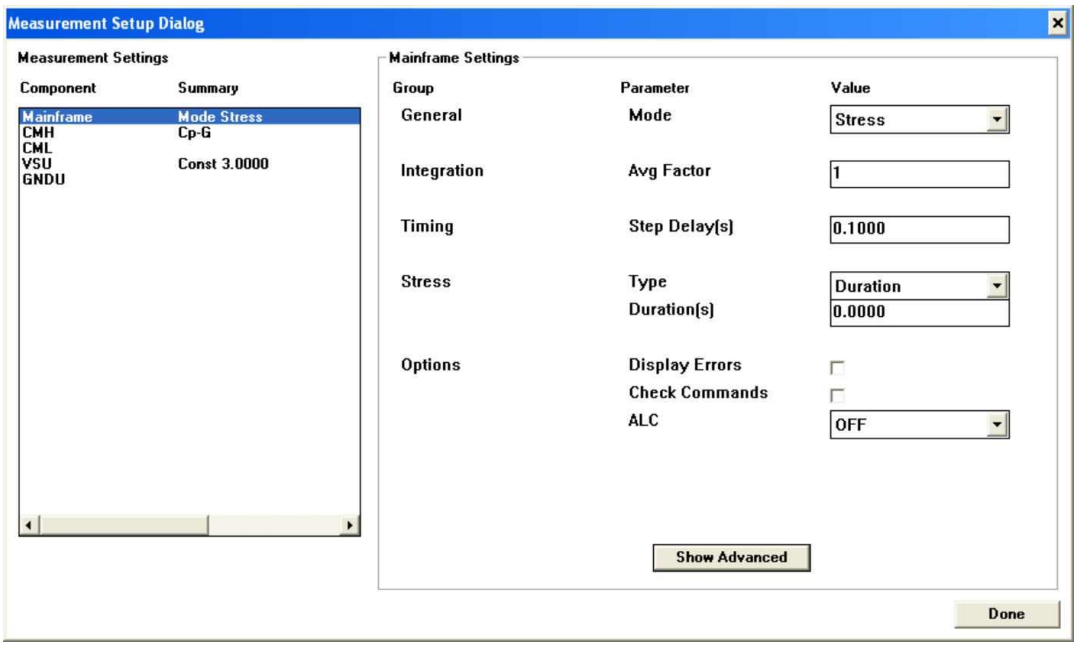
The Sampling Mainframe mode allows the test setup to use the external sampling capability of the instrument. The external sampling is a sampling mode for any instrument that the samples are triggered externally. A constant bias is applied while the DUT is measured at specified time intervals that are set in the "Timing" Mainframe Setting. All of the CMU's inputs must be set in Const Mode.



Stress Mainframe Mode

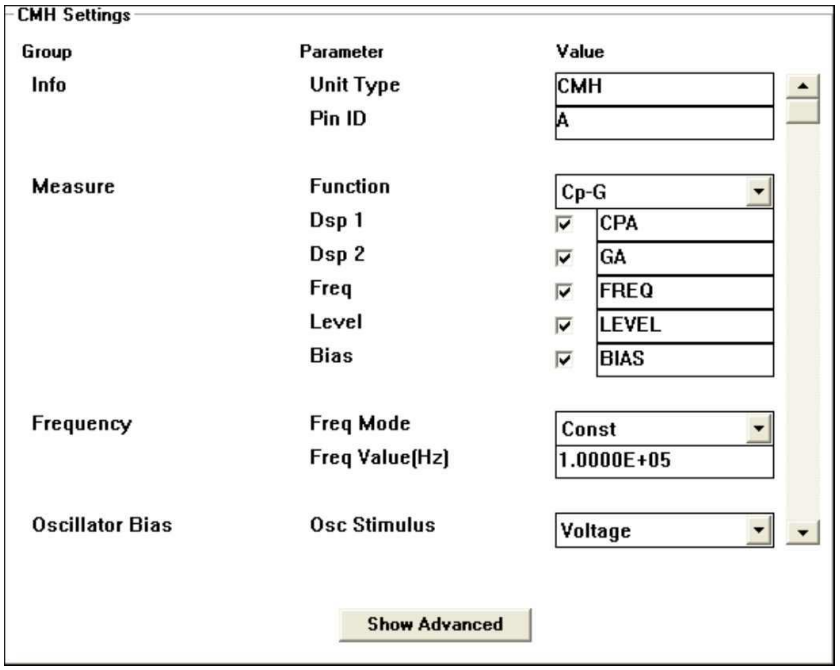
The Stress Mainframe mode allows the test setup to stress a device for a set period of time.

- The selected terminals are measured only at the beginning and end of the stress period.
- All of the CMU's inputs must be set in Const Mode.
- The length of the Stress time is set in the Duration field.



The Source Unit Setup Dialogue Box

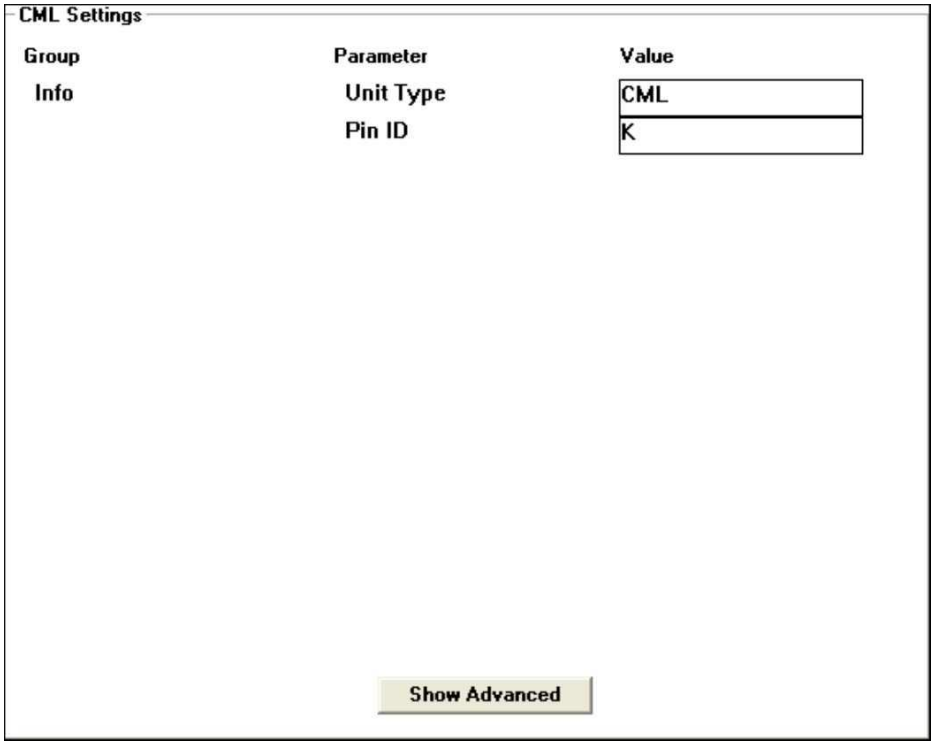
The Source Unit Setup dialogue box is used to specify the source/measure configuration of each AT4285 module.



The contents of CMH Measurement Setup dialogue box are outlined below:

1. **Unit Type Field:** This field displays the CMU designation for the corresponding AT4285 module.
2. **Pin ID Field:** This field contains the name of the device pin it is attached to in the Setup Editor.
3. **Meas. Function Field:** This field displays the selection of measurement functions available.
4. **Dsp 1 Field:** This field allows the selection and naming of the first measured value from the instrument.
5. **Dsp 2 Field:** This field allows the selection and naming of the second measured value from the instrument.
6. **Freq Field:** This field allows the selection and naming of the frequency measured value from the instrument.
7. **Level Field:** This field allows the selection and naming of the oscillator measured value from the instrument.
8. **Bias Field:** This field allows the selection and naming of the Bias measured value from the instrument.
9. **Freq Mode Field:** This field allows the selection of the oscillator frequency to be Constant, Stepped, or Swept.
10. **Freq Value Field:** This field allows the setting of the oscillator frequency of the instrument.

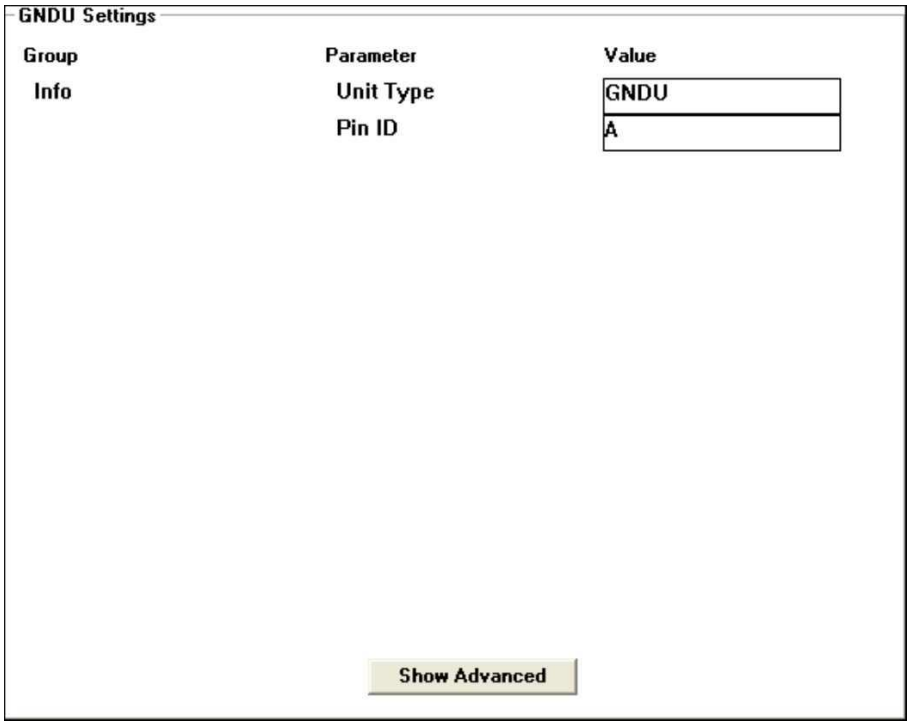
11. **Osc Stimulus Field:** This field allows the selection of the oscillator bias as Voltage or Current.
12. **Osc Mode Field:** This field allows the selection of the oscillator bias to be Constant, Stepped, or Swept.
13. **Osc Level Field:** This field allows the selection of the oscillator bias values to be used during the measurement.
14. **Bias Output Field:** This field allows the DC Bias to be enabled or disabled.
15. **Bias Stimulus Field:** This field allows the selection of the DC bias as Voltage or Current.
16. **Bias Mode Field:** This field allows the selection of the DC bias to be Constant, Stepped, or Swept.
17. **Bias Value/List Field:** This field allows the setting of the DC Bias values. If DC Bias Output is enabled then the value is a single value if the Mode is Const, otherwise it is a list of values.
18. **Imp Range Type Field:** This field allows the selection of the type of Impedance ranging control via a pull-down menu.
19. **Imp Range Hold Field:** This field allows the setting of the impedance range value.



The contents of CML Measurement Setup dialogue box are outlined below:

1. **Unit Type Field:** This field displays the CMU designation for the corresponding AT4285 module.

2. **Pin ID Field:** This field contains the name of the device pin it is attached to in the Setup Editor.



The contents of GNDU Measurement Setup dialogue box are outlined below:

1. **Unit Type Field:** This field displays the CMU designation for the corresponding ATE4285 module.
2. **Pin ID Field:** This field contains the name of the device pin it is attached to in the Setup Editor.