Agilent 34405A
5 ½ Digit Multimeter

Quick Start Guide
English

Agilent Technologies

Safety Summary

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 Agilent Technologies or a designated repair center for service to ensure that safety features are maintained.

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.

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.

Symbols


Earth Ground


Chassis Ground


Risk of electric shock


Refer to manual for additional safety information.

CAT II (300 v) IEC Overvoltage Category II. Inputs can be connected to mains (up to 300 VAC) under Category II overvoltage conditions.

WARNING

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

Line and Current Protection Fuses: For continued protection against fire, replace the line fuse and the current-protection fuse only with fuses of the specified type and rating.

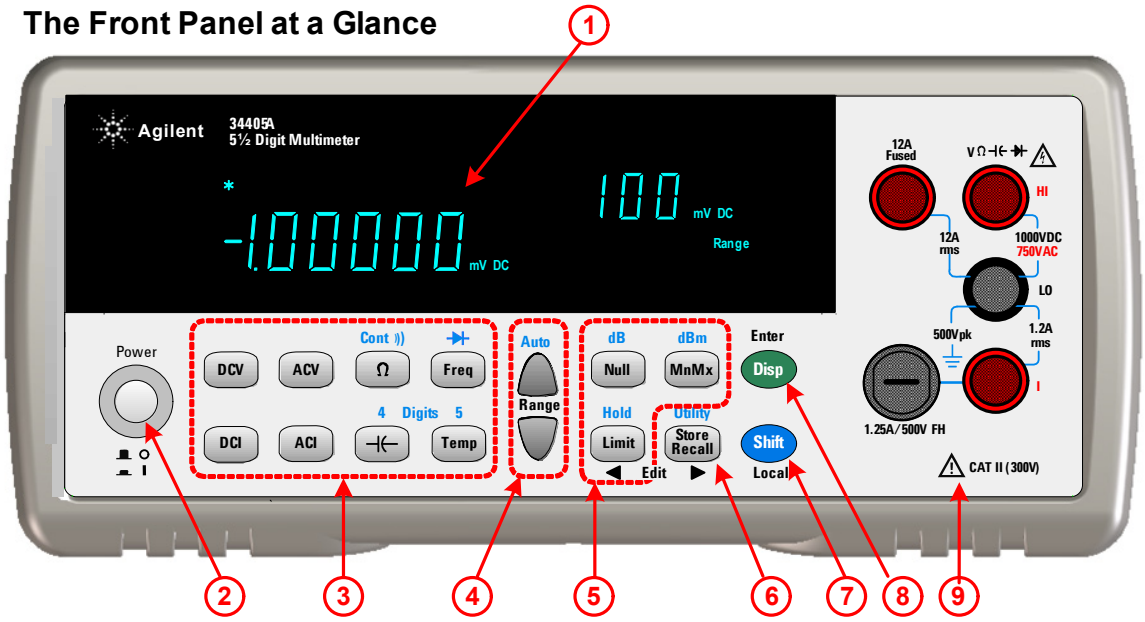
IEC Overvoltage Category II. The HI and LO input terminals may be connected to mains under IEC Category II overvoltage conditions for line voltages up to 300 VAC. To avoid the danger of electric shock, do not connect the inputs to mains for line voltages above 300 VAC. Connect to mains only at an outlet, or in a device connected to such an outlet, on a branch circuit protected by a circuit breaker. See "Safety Notices" in the *Agilent 34405A User's and Service Guide* for further information.

Protection Limits: To avoid instrument damage and the risk of electric shock, do not exceed any of the protection limits indicated on the terminal panel and defined in the *Agilent 34405A User's and Service Guide.*

ADDITIONAL SAFETY INFORMATION

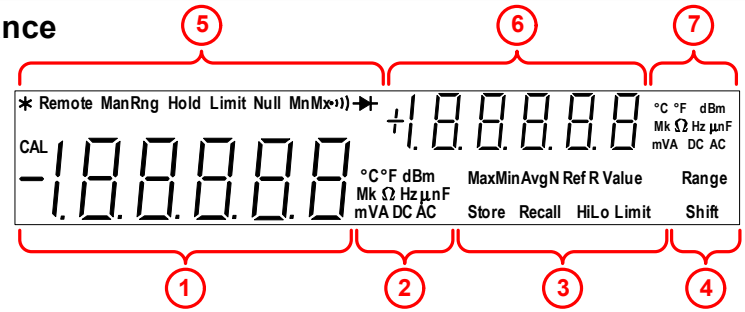
For further information, refer to the "Safety Notices" section in the *Agilent 34405A User's and Service Guide*.

The Front Panel at a Glance



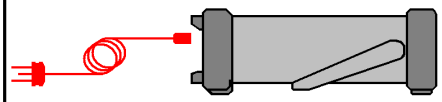
1 Display
2 On/Off Switch
3 Measurement Function and Resolution Keys
4 Autorange and Manual Range
5 Math Operations and Edit
6 State Store/Recall, Utility and Edit Keys
7 Shift (selects blue shifted keys) and Local key
8 Secondary Display Key
9 Input Terminals and Current Fuse

The Display at a Glance



1 Primary Measurements and CAL Annunciator
2 Primary Measurement Function and Units
3 Math and State Storage Annunciators
4 Range and Shift Annunciators
5 System Annunciators
6 Secondary Display
7 Secondary Measurement Function and Units

1. Connect the Power Cord

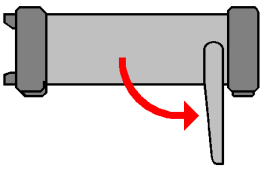


Line voltage switch and fuse are set at factory for country of destination.

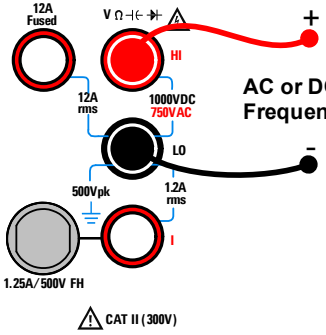
2. Adjust the Carrying Handle

Grasp the handle by the sides and *pull outward:*

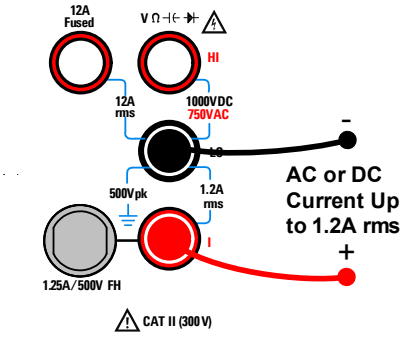
Then adjust the handle to the desired position:



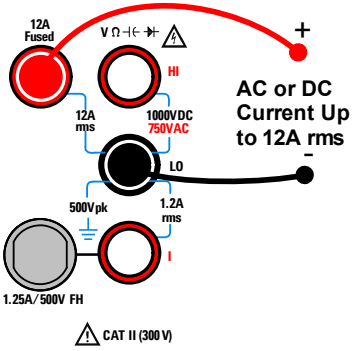
3. Connect the Test Leads to the Input Terminals



AC or DC Voltage, Capacitance, Continuity, Diode Test, Frequency, Resistance, or Temperature Measurements



AC or DC Current Up to 1.2A rms

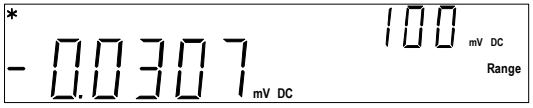


AC or DC Current Up to 12A rms

4. Turn On the Multimeter

Press the Power (on/off) switch:

The front-panel display illuminates while the multimeter performs its power-on self-test. Following self-test, the multimeter defaults to DC voltage measurements.* Typical display:

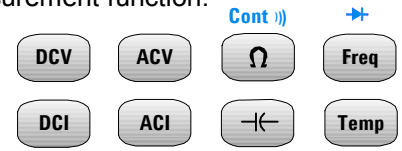


Measurements are shown in the primary display (bottom left) and the measurement range is shown in the secondary display (top right).

**You can set the multimeter to return to the last power-down state when power is applied. See the 34405A User's and Service Guide for details.*

5. Select a Function

Press one of these keys to select a measurement function:



The continuity and diode test functions are shifted (shown in blue). For example, to select continuity, press:

Press DCV to return to the DC voltage function.

6. Set the Range

For most measurement functions, you can let the multimeter automatically select the range using autoranging or you can select a fixed range using manual ranging. The **ManRng** annunciator is displayed when manual ranging.

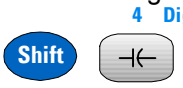
Selects a higher range and disables autoranging

Selects a lower range and disables autoranging

To return to autoranging and disable manual ranging, press:

7. Set the Resolution

You can select either 4½ or 5½ digit resolution for most measurement functions. 5½ digit readings have the best accuracy and noise rejection. 4½ digit readings provide for faster readings.



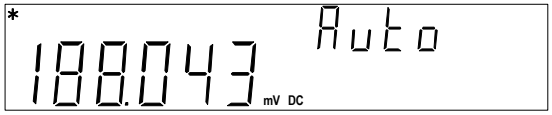
Selects 4½ digit mode

Selects 5½ digit mode

Note: The continuity and diode test functions have a fixed, 4½ digit display. Capacitance and temperature have a fixed, 3½ digit display.

8. Using the Secondary Display

When making measurements, the secondary display allows you to show the measurement range (for most measurement functions) or to select a predefined secondary measurement function. You may have already noticed the secondary display showing **Auto** for autorange when changing measurement functions:



As another example, a typical primary display showing ACV and a secondary display showing the measured frequency of the input signal is:

The secondary display is based on the selected primary measurement function and how many times you press:

Disp

The table below shows the secondary display capabilities for all measurement functions.

Primary and Secondary Display Functions

Primary Display	Secondary Display		
	Default Secondary Display	Press Disp Once	Press Disp Twice
DCV	DCV Range	ACV	Off
DCI	DCI Range	ACI	Off
Resistance	Resistance Range	Off	Resistance Range
ACV	ACV Range	Frequency	Off
ACI	ACI Range	Frequency	Off
Frequency	AC Voltage Range	ACV	Off
Capacitance	Capacitance Range	Off	Capacitance Range
Temperature	Off	Off	Off
Continuity	Off	Off	Off
Diode Test	Off	Off	Off

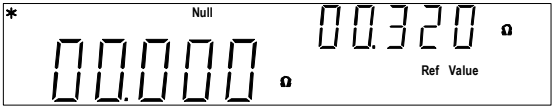
9. Using the Math Functions

The 34405A has these math functions: Null, dBm, dB, Min/Max, Limit and Hold. As an example, Null is commonly used to eliminate the effects of test leads from measurements. Connect the test leads together and to the HI and LO input terminals. Select resistance measurements by pressing:

The display should be showing the measured test lead resistance. Typical display:

To select the math Null function, press: 

The Null value is measured and subtracted from all resistance readings in the primary measurement display. The Null value is shown in the secondary display and the **Null** and **Ref Value** annunciators are on. Typical display:



Pressing the same math key again turns the math function off.

10. Editing Values in the Secondary Display

You can edit the values used for the Null, Limit, dB or dBm math function.

Selecting the Value to Edit:

With the math function enabled, press Disp until the ***Ref Value***, ***Ref R Value***, ***Hi Limit*** or ***Lo Limit*** you want to edit is displayed in the secondary display.

To select the editing mode, press: Limit (◀ Edit)

The secondary display will briefly show ***Edit*** to indicate you are in editing mode.

Editing Values:

Use these keys to position the cursor on a digit:

Limit (◀ Edit) Moves cursor to the left

Store Recall (Edit ▶) Moves cursor to the right

When the cursor is positioned on a digit, use these keys to edit the value:

 Increments digit

 Decrements digit

When done editing, save the new value by pressing: Disp

11. Where to go Next

The *Agilent 34405A User's and Service Guide* contains more detailed information on the front panel, math functions and the utility menu (allows you to customize instrument settings). It also contains product specifications, rack mounting instructions, a calibration procedure and replaceable parts.

For information on SCPI programming, see the *Agilent 34405A Programmer's Reference Online Help*.

Product Reference CD-ROM. All product documentation, software, and examples are included on the *Agilent 34405A Product Reference CD-ROM*.