



# Agilent U1271A/U1272A Handheld Digital Multimeter

## Quick Start Guide



Verify that you received the following items in the shipment of your multimeter:

- ✓ One pair of red and black test leads
- ✓ One pair of 4 mm test probes
- ✓ One K-type thermocouple lead kit
- ✓ Four 1.5 V AAA alkaline batteries
- ✓ Printed copy of the U1271A/U1272A Quick Start Guide
- ✓ Printed copy of the Certificate of Calibration

If any item is missing or damaged, keep the shipping materials and contact the nearest Agilent Sales Office.

### NOTE

The descriptions and instructions in this guide apply to the U1271A and U1272A Handheld Digital Multimeters.

The model U1272A appears in all illustrations.

All related documents and software are available for download at [www.agilent.com/find/hhTechLib](http://www.agilent.com/find/hhTechLib).



## U1271A/U1272A Handheld Digital Multimeter

Differences between the U1271A and U1272A

### Differences between the U1271A and U1272A

The U1272A model offers these additional functions:

- $Z_{LOW}$  (low input impedance) measurements
- Smart  $\Omega$  measurements
- Auto-diode tests
- AC+DC voltage and current measurements
- J-type thermocouple temperature measurements
- 30  $\Omega$  and 300 M $\Omega$  ranges for resistance measurements
- dBm and dBV measurements with selectable impedance
- Data logging up to 10,000 memories

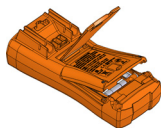
The U1271A model has one differing function:

- Qik-V tests

### Install the Batteries

Your multimeter is powered by four 1.5 V AAA alkaline batteries (included with the shipment).

- 1 Turn the rotary switch to OFF and remove the test leads from the terminals.
- 2 Lift the tilt stand and loosen the screws with a suitable Phillips screwdriver.
- 3 Remove the battery cover and observe the polarity markings.
- 4 Insert the batteries and replace the battery cover and screws.



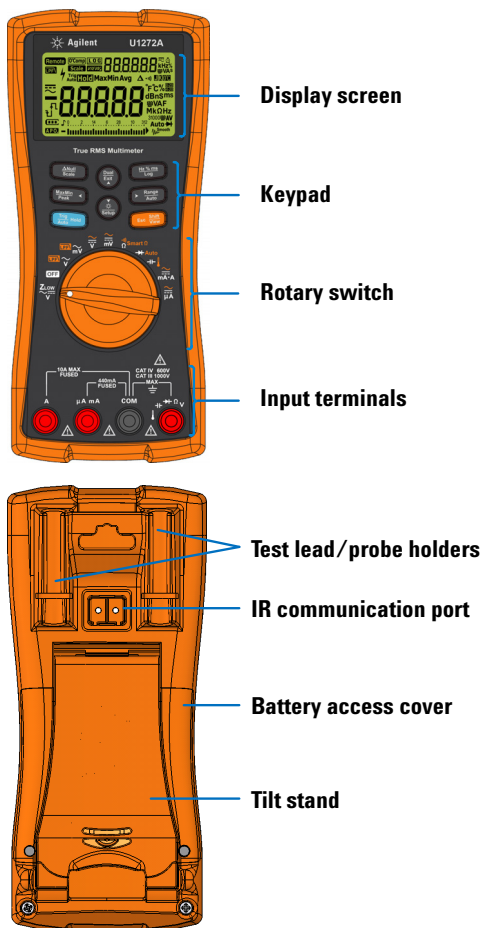
### Turn On the Multimeter

To power ON your multimeter, turn the rotary switch to any other position.

#### NOTE

Your multimeter is capable of remote data logging. To use this feature, you will need an IR-USB cable (U1173A, purchased separately) and the Agilent GUI Data Logger Software (downloadable from [www.agilent.com/find/hhTechLib](http://www.agilent.com/find/hhTechLib)).

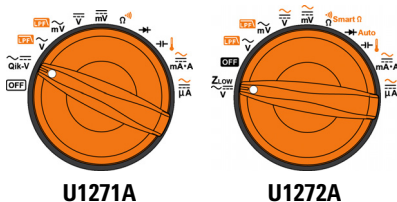
### The Multimeter at a Glance




## U1271A/U1272A Handheld Digital Multimeter
















### Understanding the Rotary Switch

## Understanding the Rotary Switch



#### NOTE









Press  to switch between the **shifted** and **regular** functions.

Legend	Description
 	AC V with Low Pass Filter
 	AC mV with Low Pass Filter
	DC, (AC, or AC+DC V, U1272A only)
	DC, (AC, or AC+DC mV, U1272A only)
 	Resistance/Continuity/(Smart Ω, U1272A only)
 	Diode/(Auto-diode, U1272A only)
	Capacitance/Temperature
	AC, DC, or (AC+DC mA and A, U1272A only)
	AC, DC, or (AC+DC μA, U1272A only)
	AC/DC V check for signal identification (U1271A only)
	Z <sub>LOW</sub> (low input impedance) AC/DC V for checking ghost voltages (U1272A only)

## Understanding the Keypad

True RMS Multimeter



Legend	Key response when pressed for:	
	Less than 1 second	More than 1 second
	Sets the Null/Relative mode.	Sets the Scale mode for the specified ratio and unit display.
	Starts and stops the MaxMin recording.	Starts and stops the Peak recording.
	Freezes the present reading in the display.	Automatically freezes the present reading once the reading is stable.
	Switches between available dual-combination displays.	Exits the Hold, Null, MaxMin, Peak, frequency test, and dual display modes.
	Turns the backlight on/off.	Enters/Exits the multimeter's setup menu.
	Switches between frequency, pulse width, and duty cycle measurements.	Starts and stops the Data Logging.
	Sets a manual range.	Enables autoranging.
	Switches between the regular and shifted (icons printed in orange) functions.	Enters the Log Review menu.

### Understanding the Input Terminals

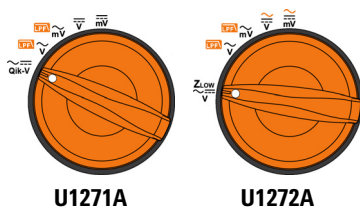
**WARNING** Ensure that the terminal connections are correct for that particular measurement function before starting any measurement. To avoid damage to the device, do not exceed the input limit.

Rotary position	Input terminals	Overload protection
		1000 Vrms
		1000 Vrms for short circuit <math><0.3\text{ A}</math>
		11 A/1000 V, 30 kA fast-acting fuse
		440 mA/1000 V, 30 kA fast-acting fuse

## Performing Measurements and Tests

### Voltage measurements

The figure below highlights the primary functions allowing voltage measurements in your multimeter.








Set up your multimeter as shown in the figure below to perform voltage measurements. When measuring DC voltage from a mixed signal in DC measurement mode, ensure that the Filter (LFA) is enabled.





## U1271A/U1272A Handheld Digital Multimeter

### Performing Measurements and Tests

- 1 Press  for more than 1 second to enter the multimeter's setup menu.
- 2 Press  or  until **FILTER** is shown on the secondary display.
- 3 Press  or  to enable the Filter.  
Refer to the table below for the respective firmware versions.

Version 2.00	Version 2.04 or newer
on	dC


- 4 Press  to save your changes.
- 5 Press and hold  until the multimeter restarts and returns to normal operation. Turn the multimeter to DC Voltage mode to verify that the LPF symbol is turned on.

#### CAUTION

To avoid possible electric shock or personal injury, enable the Filter (**LPF**) to verify the presence of hazardous DC voltages. Displayed DC voltages can be influenced by high frequency AC components and must be filtered to assure an accurate reading.

### LPF during AC measurements:



Press  while performing AC voltage measurements to pass the measured signal through a low pass filter.

- Passing the measured signal through a LPF help blocks unwanted voltages such as electronic noise.
- Use the LPF function to improve measurement on composite sine waves that are typically generated by inverters and variable frequency motor drives.



#### $Z_{LOW}$ measurements (U1272A only):



Rotate the rotary switch's position to  $Z_{LOW}$  to enable low impedance measurements.

- Use the  $Z_{LOW}$  (low input impedance) function to detect ghost or induced voltages.
- Ghost voltages can be caused by capacitive coupling between energized wiring and adjacent unused wiring.

#### Qik-V test (U1271A only):



Rotate the rotary switch's position to Qik-V to enable the Qik-V function.

- Use the Qik-V function to quickly identify the measured signal type.
- Use this function as a reference to determine if the measured signal is an AC or DC signal, then select the appropriate voltage measurement function by turning the rotary switch to an appropriate position (AC or DC).

## U1271A/U1272A Handheld Digital Multimeter

Performing Measurements and Tests

### Resistance measurements

Set up your multimeter as shown in the figure below to perform resistance measurements.




### Smart Ω measurements (U1272A only):




While performing resistance measurements, press **Shift/View** until **0Comp** is shown on the display to enable the Smart Ω function.

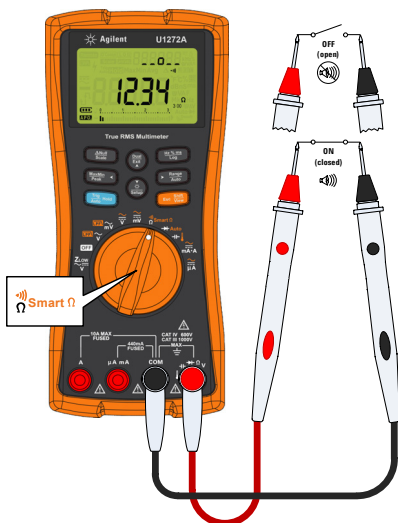
- Use the Smart Ω function to measure resistors affected by DC offset or leakage current.
- If DC offset or bias voltages are detected on the resistor-under-measure, the offset or bias DC voltage value will be shown on the secondary display. If the DC voltage on the resistor is over +1.25 V, **OL** is shown on the secondary display.

## Continuity tests

Set up your multimeter as shown in the figure below to perform continuity tests. Press  to switch to the continuity test function (••) is shown on the display).

You can set the beeper to sound and the backlight to flash as a continuity indication whether the circuit-under-test is less than (short) or more than or equal to (open) the threshold resistance.

Press  to switch between short (••) and open (••) states for checking NO (normal open) and NC (normal close) contacts.

**NOTE**

The continuity function detects intermittent shorts and opens lasting as short as 1 ms. A brief short or open causes the multimeter to emit a short beep and flash.

## U1271A/U1272A Handheld Digital Multimeter

### Performing Measurements and Tests

## Diode tests

Set up your multimeter as shown in the figure below to perform diode tests.



### Auto-diode tests (U1272A only):

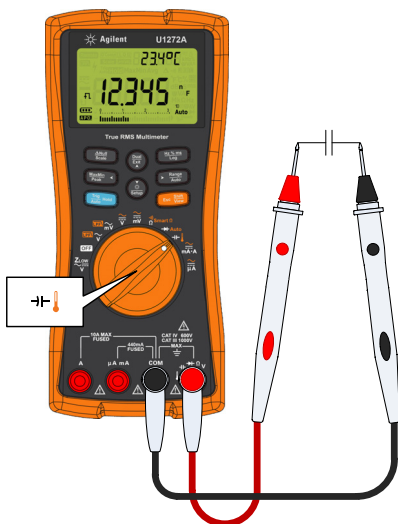


Press **Auto** until **Auto** is shown on the display to use the auto diode function.

- The Auto-diode function tests both the forward bias and reverse bias directions of your diode simultaneously. The forward bias voltage is shown on the primary display and the reverse bias voltage is shown on the secondary display.
- **Good** will be indicated briefly on the secondary display along with a brief beep if the diode is found to be in good condition. **nGood** is shown if the diode is out of the thresholds.

## Capacitance measurements

Set up your multimeter as shown in the figure below to perform capacitance measurements.

**NOTE**

$\text{||}$  is shown on the bottom left of the display when the capacitor is charging, and  $\text{||}$  is shown when the capacitor is discharging.

## U1271A/U1272A Handheld Digital Multimeter

Performing Measurements and Tests

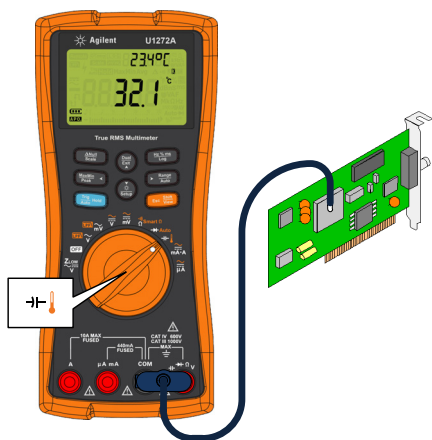
### Temperature measurements

Set up your multimeter as shown in the figure below to perform temperature measurements.

**WARNING**

**Do not connect the thermocouple to electrically live circuits. Doing so will potentially cause fire or electric shock.**

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**NOTE**

The multimeter uses a type-K (default setting) temperature probe for measuring temperature.

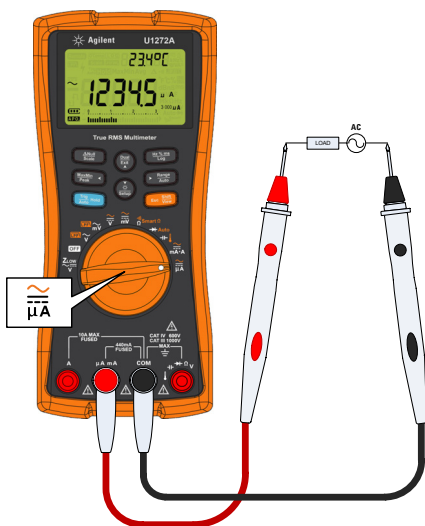
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## Current measurements

Set up your multimeter as shown in the figure below to perform current measurements. Press **FUNC** to switch between AC, DC, AC+DC, or % scale current measurements. When measuring DC current from a mixed signal in DC measurement mode, ensure that the Filter (**LF**) is enabled.

**WARNING**

**Always use the proper function, range, and terminals for current measurements. Set the positive input terminal to the  $\mu\text{A}$  mA terminal for currents below 440 mA, and the A terminal for currents above 440 mA.**



## **U1271A/U1272A Handheld Digital Multimeter**

Performing Measurements and Tests



## Contacting Agilent

To obtain service, warranty or technical assistance, contact us at the following phone numbers:

- United States Call Center: 800-829-4444
- Canada Call Center: 877-894-4414
- China Call Center: 800-810-0189
- Europe Call Center: 31-20-547-2111
- Japan Call Center: (81) 426-56-7832

For other countries, contact your country's Agilent support organization. A list of contact information for other countries is available on the Agilent Web site: [www.agilent.com/find/assist](http://www.agilent.com/find/assist)

## 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.




### 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.

## Safety Information

This meter is safety-certified in compliance with EN/IEC 61010-1:2001, ANSI/UL 61010-1:2004, and CAN/CSA-C22.2 No. 61010-1-04. Use with standard or compatible test probes.

## Safety Symbols

	Earth (ground) terminal
	Caution, risk of electric shock
	Caution, risk of danger (refer to the instrument manual for specific Warning or Caution information)
<b>CAT III 1000 V</b>	Category III 1000 V overvoltage protection
<b>CAT IV 600 V</b>	Category IV 600 V overvoltage protection

**For further safety information details, refer to the**  
*Agilent U1271A/U1272A Handheld Digital Multimeter User's Guide.*

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