
U1281A/U1282A

Handheld Digital Multimeter

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.






EMC Information

The U1281A/U1282A is EMC-certified in compliance with IEC 61326-1/EN 61326-1, CISPR11/EN55011 Group 1 Class A, ICES/NMB-001, and AS/NZS CISPR 11.

Safety Information

The U1281A/U1282A is safety-certified in compliance with IEC/EN 61010-1, IEC/EN 61010-2-030, IEC/EN 61010-2-033, CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-2-030, CAN/CSA-C22.2 No. 61010-2-033, UL Std. No. 61010-1, UL Std. No. 61010-2-030 and UL Std. No. 61010-2-033. Use with standard or compatible test probes.

Safety symbols

| | |
|---|--|
|  | Direct current (DC) |
|  | Alternating current (AC) |
|  | Caution, risk of danger (refer to this manual for specific Warning or Caution information) |
|  | Earth (ground) terminal |
|  | Equipment protected throughout by double insulation or reinforced insulation |
| CAT III 1000 V | Category III 1000 V overvoltage protection |
| CAT IV 600 V | Category IV 600 V overvoltage protection |

For further safety information details, refer to the *Keysight U1281A/U1282A Handheld Digital Multimeter User's Guide*.

Standard Shipped Items

Verify that you have received the following items with the shipment of your U1281A/U1282A multimeters:

- ✓ Test probes
- ✓ Infrared (IR)-to-USB cable
- ✓ AA batteries (4x)
- ✓ Certificate of Calibration

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

NOTE

- The descriptions and instructions in this guide apply to the U1281A and U1282A Handheld Digital Multimeters.
 - The model U1282A appears in all illustrations.
 - All related documents and software are available for download at www.keysight.com/find/hhTechLib.
-

NOTE

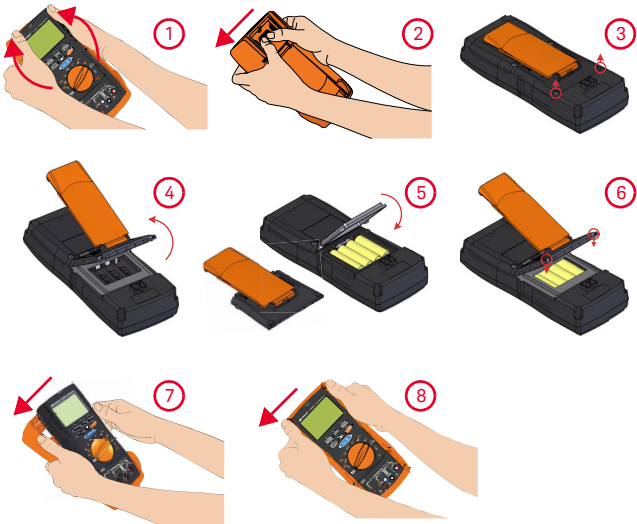
Your multimeter is capable of receiving remote commands and performing remote data logging. To use these features, you will need either an IR-to-USB cable (included in the shipment) or an IR-to-*Bluetooth*® adapter (U1117A, purchased separately), and the Keysight Handheld Meter Logger Software (downloadable from www.keysight.com/find/hhmeterlogger).

For more information on the remote commands, refer to the *U1281A/U1282A Programming Guide*.

Install or Change the Batteries

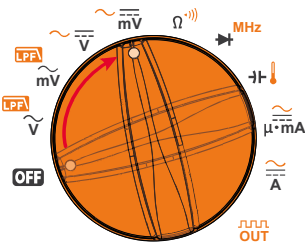
The multimeter is powered by four 1.5 V AA batteries (included in the shipment).

Before installing or changing the batteries, pull from a corner and stretch the orange rubber holster to remove it.

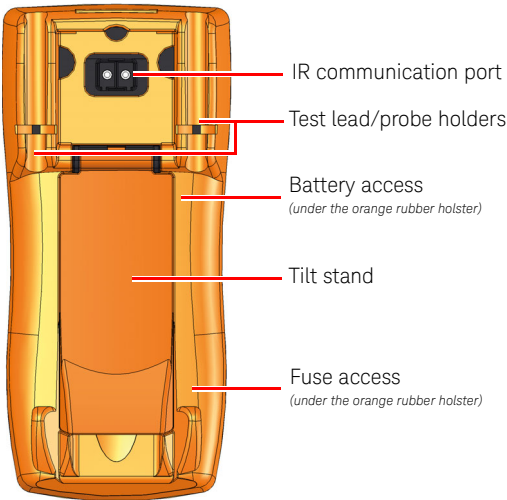
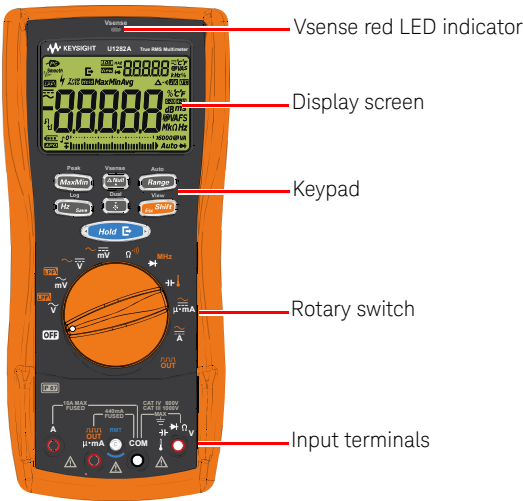


Turn On the Multimeter












Turn the rotary switch from the **OFF** position to any other position to begin making measurements.



The Multimeter at a Glance



Using the Rotary Switch

| Legend | Measurement function | Model | |
|---|---|--------|--------|
| | | U1281A | U1282A |
|   | AC V/AC V with Low Pass Filter (LPF) ^[a] | ✓ | ✓ |
|   | AC mV/AC mV with LPF ^[a] | ✓ | ✓ |
|  | DC/AC/AC+DC V | ✓ | ✓ |
|  | DC/AC/AC+DC mV | ✓ | ✓ |
|  | Resistance/Continuity | ✓ | ✓ |
|  MHz | Diode/Frequency counter ^[a] | ✓ | ✓ |
|  | Capacitance/Temperature | ✓ | ✓ |
|  | DC μ A/mA/AC μ A/mA/AC+DC μ A/mA | ✓ | ✓ |
|  | DC A/AC A/AC+DC A | ✓ | ✓ |
|  OUT | Square wave mode ^[a] | – | ✓ |








[a] For U1282A only.

WARNING

Remove the test leads from the measuring source or target before changing the rotary switch position.

Refer to the *U1281A/U1282A User's Guide* for a complete list and description of all rotary switch labels.

Using the Keypad




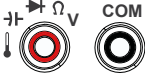





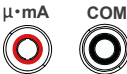

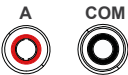


| Legend | Key response when pressed for: | |
|--|--|--|
| | Less than 1 second | More than 1 second |
| Peak  | <ul style="list-style-type: none"> - Starts the Max/Min/Avg recording - Switches between the Max/Min/Avg recording modes | <ul style="list-style-type: none"> - Stops the Max/Min/Avg recording - Starts and stops the Peak recording |
| Vsense  | Sets the Null/Relative mode | Enables and disables the non-contact voltage detection – Vsense ^[a] |
| Auto  | Sets a manual range | Enables autoranging |
| Log  | Enables the frequency test mode for current or voltage measurements | Starts and stops data logging |
| Dual  | Turns the backlight on/off | Activates and deactivates the dual display mode (if supported by the measurement) |
| View  | Switches between the regular and shifted (icons printed in orange) functions | Enters the Log Review menu |
|  | <ul style="list-style-type: none"> - Freezes the present reading in the display (TrigHold mode) - Automatically freezes the present reading when certain conditions are met (AutoHold mode; when enabled from the multimeter's Setup mode) - Exits the AutoHold mode - Stores a record of the measured signal and exports it via the multimeter's optical communication port | Exits the TrigHold mode |


[a] For the U1282A only

Using the Input Terminals

WARNING


To avoid damaging this device, do not exceed the input limit.

| Rotary position | Input terminals | Overload protection |
|---|---|------------------------------------|
|  | | 1000 Vrms |
|  | | |
|  |  | |
|  | | |
|  | | 1000 Vrms for short circuit <0.3 A |
|  | | |
|  | | |
|  |  | 440 mA/1000 V, fast-acting fuse |
|  |  | 11 A/1000 V, fast-acting fuse |
|  |  | |

This input terminal is for use with the Remote Switch Probe (purchased separately). The button on the probe emulates the  button on the multimeter by default.

Safety Alerts and Warnings


Hazardous voltage indication

The multimeter will display the hazardous voltage () symbol as an early precaution when the measured voltage is:

| Measurement | DC | | AC |
|-------------|---------------------|---------------------|-------------------|
| V (mV) | $\geq +30$ V or +OL | ≤ -30 V or -OL | ≥ 30 V or OL |

This symbol will also be displayed when the input signal exceeds the limitation of measuring circuit as frequency dependence.

Hazardous current indication

The multimeter will display the hazardous current () symbol as an early precaution when the measured current has reached the maximum fuse rating as follows:

| Measurement | DC | | AC |
|-------------|----------------------|-----------------------|---------------------|
| A | $\geq +11$ A or +OL | ≤ -11 A or -OL | ≥ 11 A or OL |
| μ A/mA | ≥ 440 mA or +OL | ≤ -440 mA or -OL | ≥ 440 mA or OL |

CAUTION

If your measuring current is > 10 A ~ 19.999 A, you will need to lower the current within a 30-second time limitation to avoid blowing the multimeter's fuse.

Input Warning

The multimeter emits a continuous beep and the red LED indicator lights up when:

- the test lead is inserted into the **A** or **μ mA** input terminal but the rotary switch is not set to the correct current position. The secondary display will show **A-Err** or **μ AErr** until the test lead is removed. The beeping will stop automatically after 5 seconds even if the test lead is not removed.

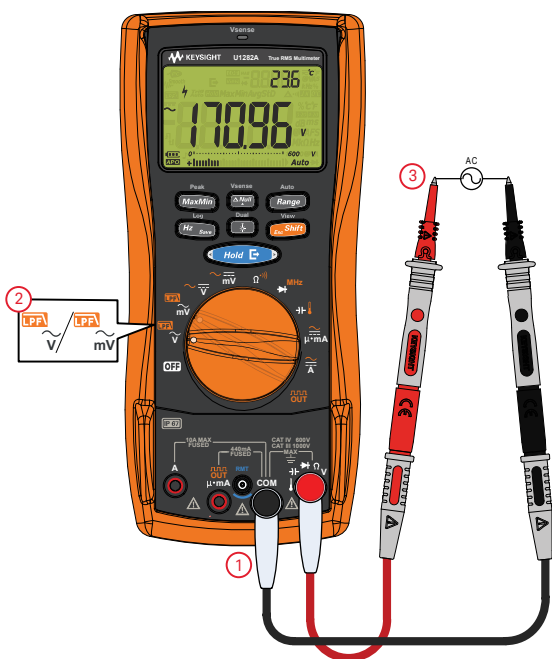


- the rotary switch is set to the current measurement position but no lead is inserted into its respective input terminal. The secondary display will show **LEAd** and the warning alert will stop after approximately 3 seconds.



Voltage Measurements

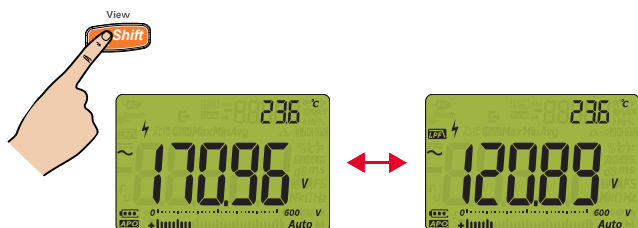
Measuring AC voltage



Using the AC low-pass filter (LPF)

WARNING

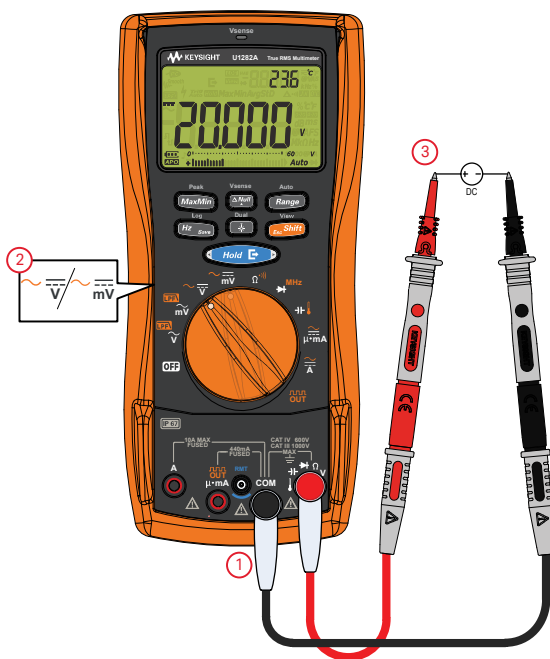
To avoid possible electric shock or personal injury, ensure that you are aware of the voltage level without the LPF enabled. There may be a possible presence of hazardous voltage, and voltages measured with the LPF enabled may be greater than indicated. For your safety, take note of the **LPF** symbol. Disable the LPF when you have completed your measurement.



NOTE

The LPF can improve measurement performance on composite sine waves that are typically generated by inverters and variable frequency motor drives.

Measuring DC voltage



Current Measurement

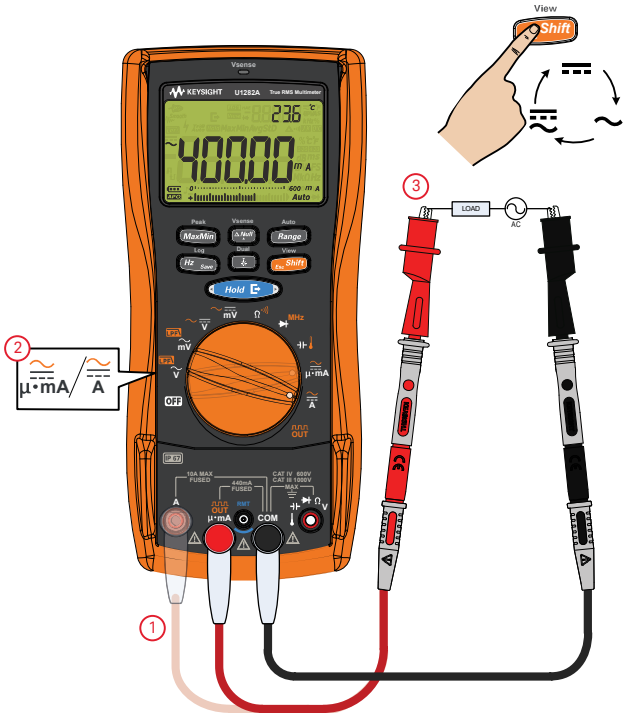
Measuring AC/DC current

WARNING

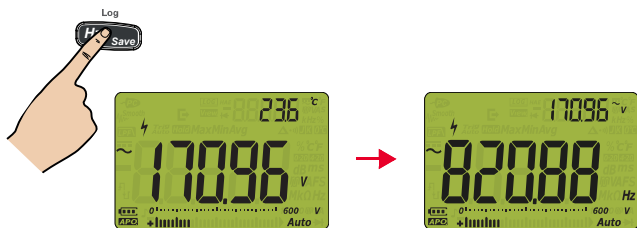
Never attempt an in-circuit current measurement where the open-circuit potential to earth is greater than 1000 V.

CAUTION

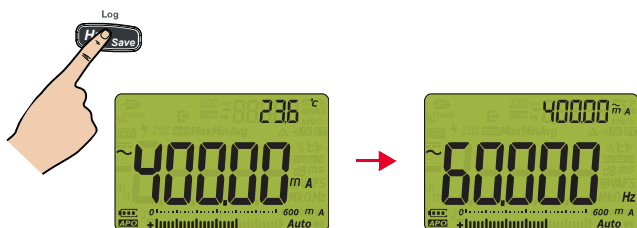
Current can be measured up to 440 mA (maximum) continuously. You can measure current more than 440 mA and up to 600 mA for 20 hours maximum.



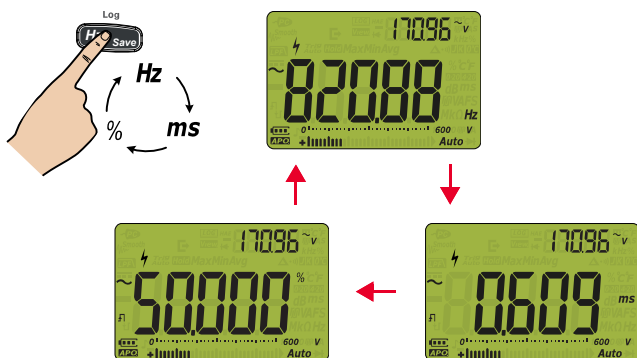
Measuring voltage frequency



Measuring current frequency



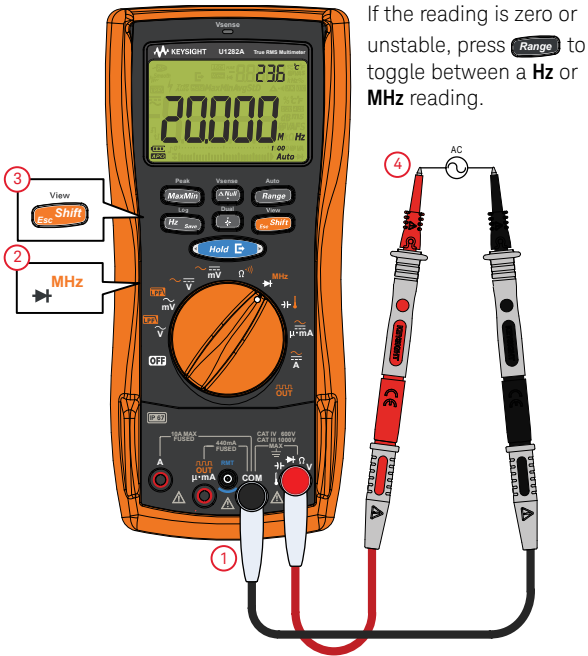
Measuring frequency/duty cycle/pulse width



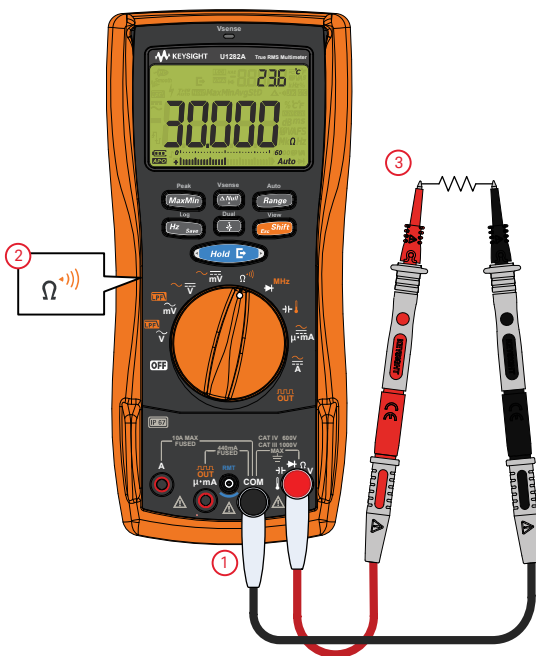
Frequency Counter (U1282A only)

WARNING

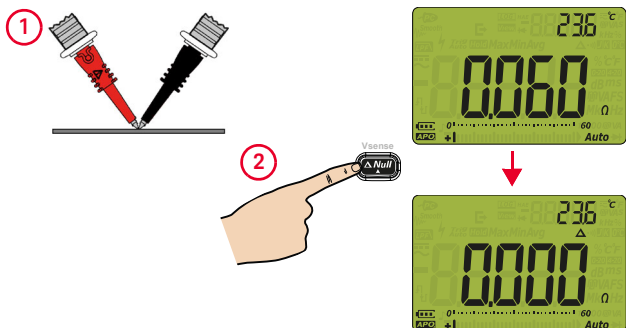
- Use the frequency counter for low voltage applications. Never use the frequency counter on AC power line systems.
- For input more than 3.6 Vpp, you are required to use the frequency measurement mode available under the current or voltage measurement instead of the frequency counter.



Resistance Measurement



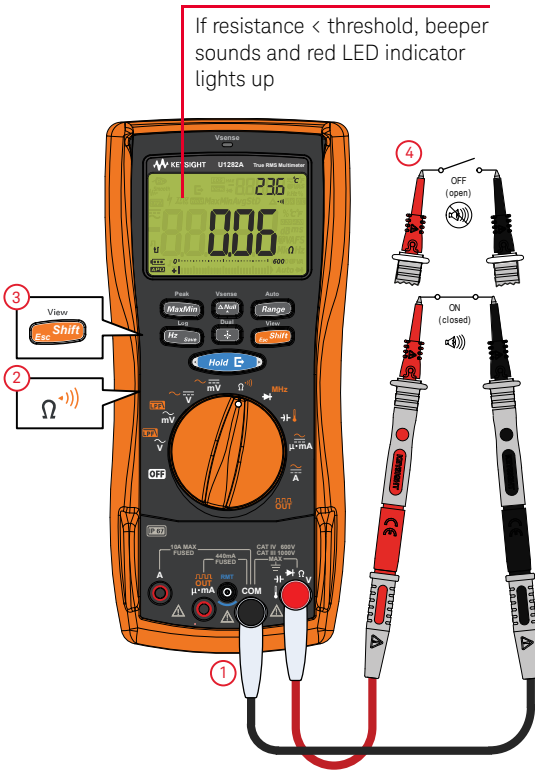
Removing test lead resistance



Continuity Tests

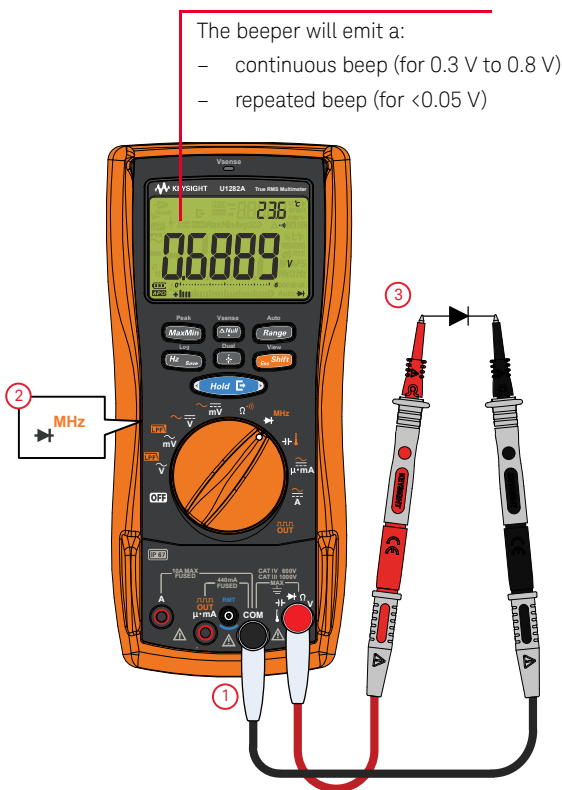
CAUTION

To avoid possible damage to the multimeter or to the equipment under test, disconnect circuit power and discharge all high-voltage capacitors before measuring continuity. Use the DC voltage function to confirm that the capacitor is fully discharged.

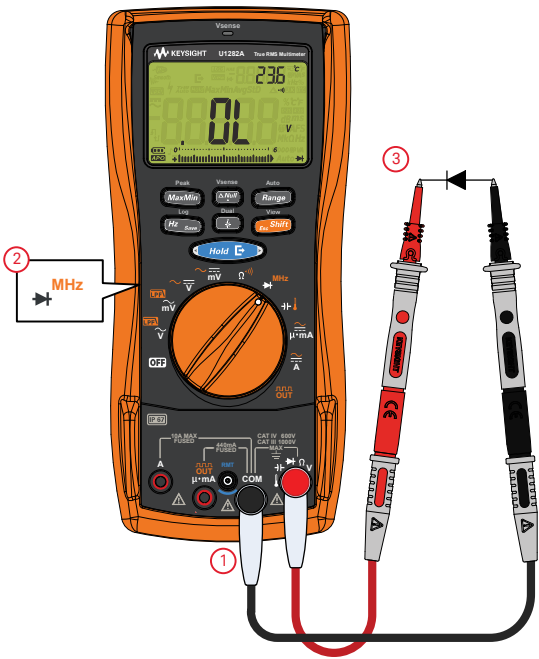


Diode Tests

Forward bias



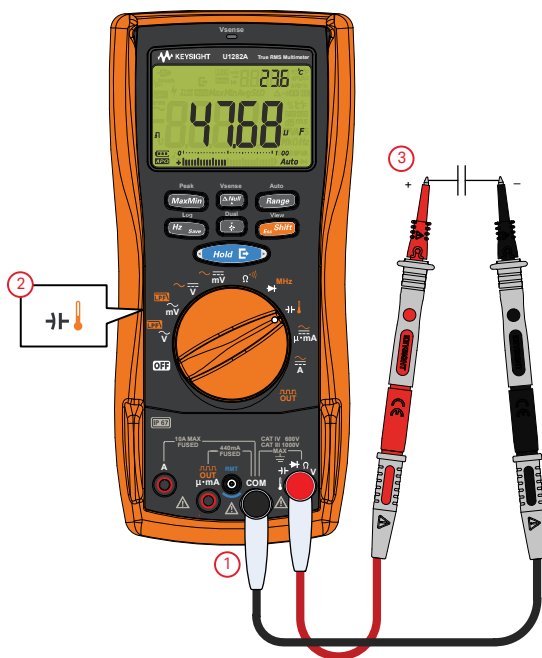
Reverse bias



Capacitance Measurement

CAUTION

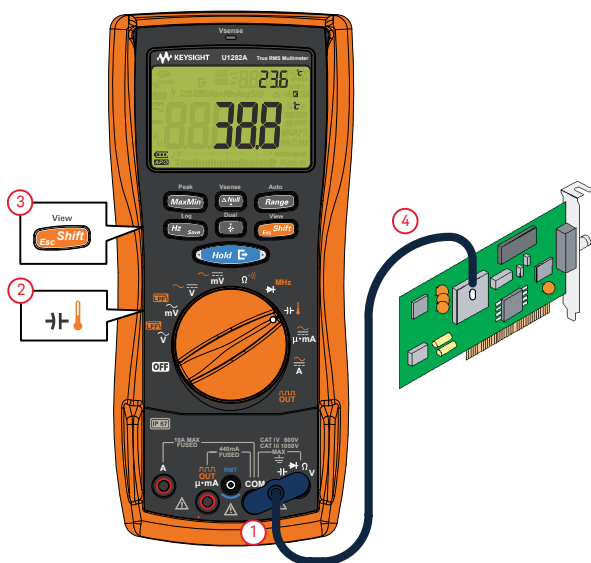
To avoid possible damage to the multimeter or to the equipment under test, disconnect circuit power and discharge all high-voltage capacitors before measuring capacitance. Use the DC voltage function to confirm that the capacitor is fully discharged.



Temperature Measurement

WARNING

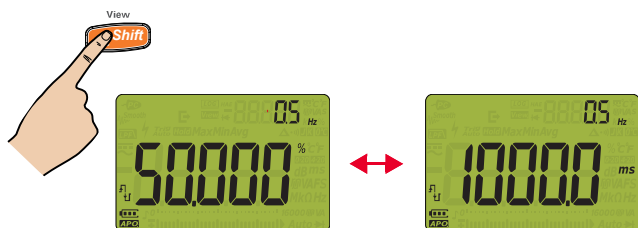
Do not connect the thermocouple to electrically live circuits. Doing so will potentially cause fire or electric shock.



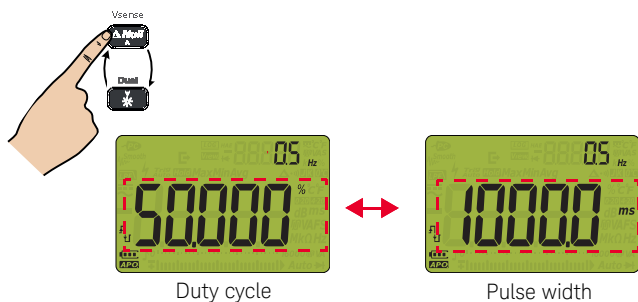
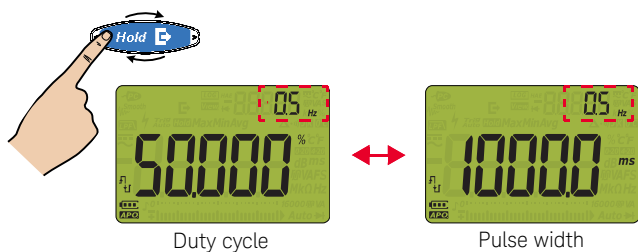
Square Wave Output



Scrolling between the pulse width/duty cycle



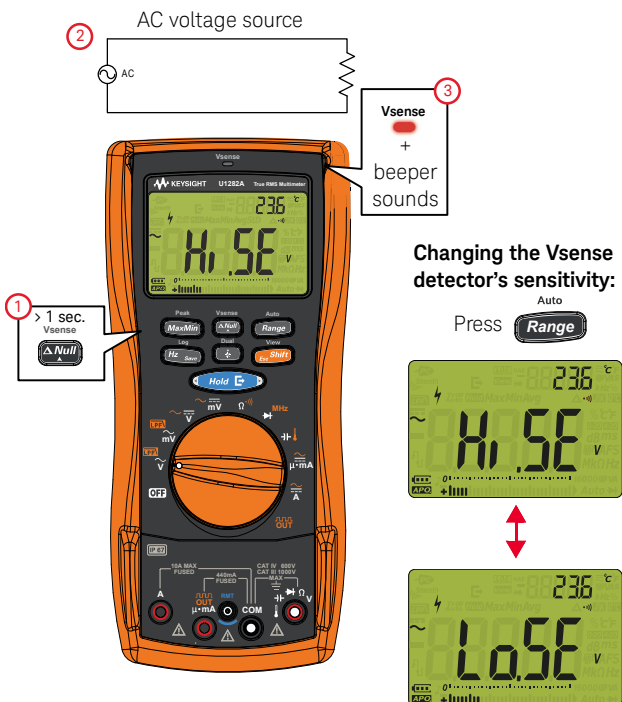
Setting the pulse width/duty cycle



Non-Contact Voltage Detector (Vsense) (U1282A only)

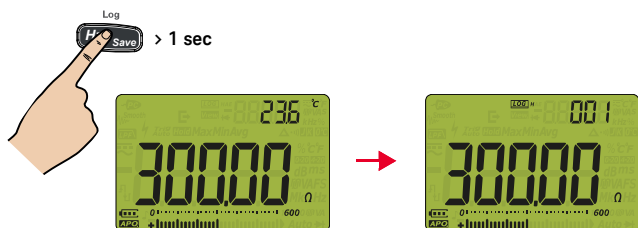
WARNING

- Voltage could still be present even if there is no alert indication. Do not rely on the Vsense detector with shielded wires. Never touch live voltage or conductors without the necessary insulation protection, or power off the voltage source.
- The Vsense detector may be affected by differences in socket design, insulation thickness, and insulation type.



Measurement Data Recording and Review

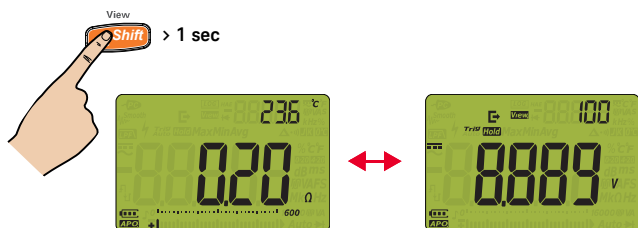
Recording measurement data (manual log)



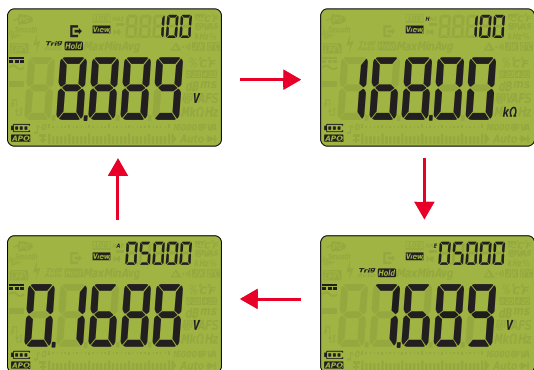
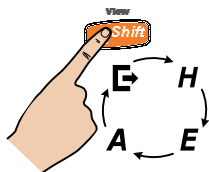
NOTE

Refer to the *U1281A/U1282A User's Guide* for other data recording options.

Viewing the recorded data

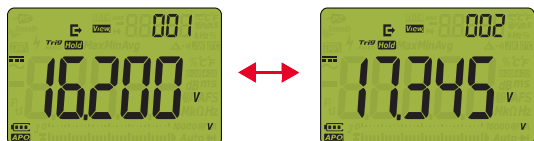
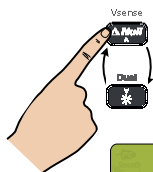


Scrolling through previously stored records

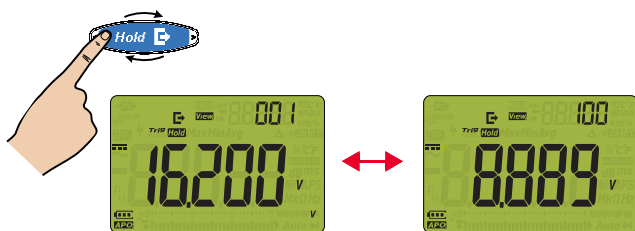


Viewing stored entries

Viewing next and previous stored entries



Viewing first and last stored entries



Clearing stored entries



This information is subject to change without notice. Always refer to the Keysight Web site for the latest revision.

© Keysight Technologies 2015 - 2024
Edition 4, May 2024

Printed in Malaysia



U1281-90000

www.keysight.com