Keysight U1241C/ U1242C Handheld Digital Multimeter

Quick Start Guide

KEYSIGHT TECHNOLOGIES

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

The U1241C/U1242C is safety-certified in compliance with IEC/EN 61010-1, IEC/EN 61010-2-033, CAN/CSA-C22.2 No. 61010-1, CAN/CSA-C22.2 No. 61010-033, ANSI/UL 61010-1, and ANSI/UL 61010-033. Use with standard or compatible test probes.

EMC Information

The U1241C/U1242C is EMC-certified in compliance with with IEC 61326-1/EN 61326-1, ICES/NMB-001, and AS/NZS CISPR 11.

Safety symbols

	Earth (ground) terminal
	Equipment protected throughout by double insulation or reinforced insulation
	Caution, risk of danger (refer to this manual for specific Warning or Caution information)
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 U1241C/U1242C Handheld Digital Multimeter User's Guide*.

Standard Accessories

The following accessories are shipped standard with the U1241C/U1242C multimeters:

- Test leads (red and black)
- IR-to-USB cable
- Four 1.5 V AAA batteries
- Printed copy of the U1241C/U1242C Quick Start Guide (this document)
- Printed copy of the Certificate of Calibration

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

NOTE

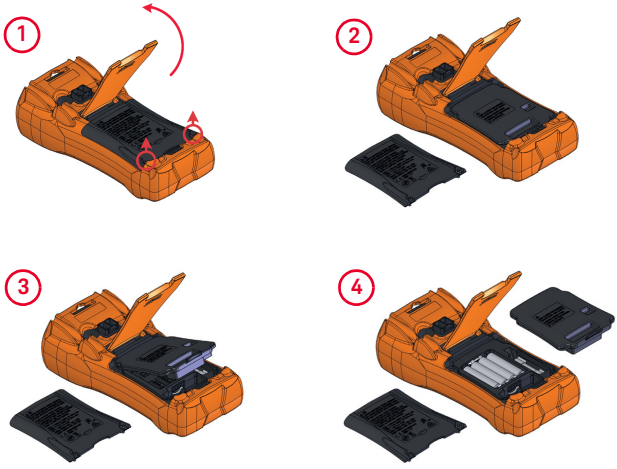
- The descriptions and instructions in this guide apply to the U1241C and U1242C Handheld Digital Multimeters.
- The model U1242C appears in all illustrations.
- All related documents and software are available for download at www.keysight.com/find/hhTechLib.

NOTE

Your multimeter is capable of receiving remote commands and performing remote data logging. To use these features, you will need 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).

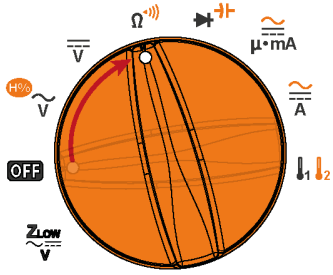
Install or Change the Batteries

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

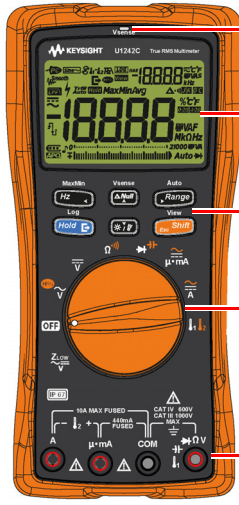


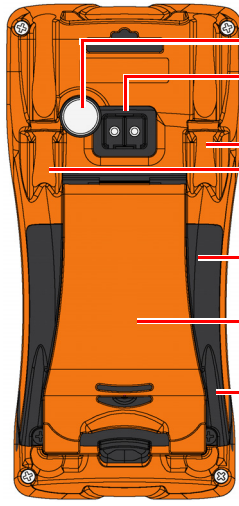
Turn On the Multimeter

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



The Multimeter at a Glance





Using the Rotary Switch

Legend	Measurement function	Model	
		U1241C	U1242C
	Z_{LOW} (low input impedance) AC/DC V for checking stray voltages	–	✔
	AC V/Harmonic ratio[a]	✔	✔
	DC V	✔	✔
	Resistance/Continuity	✔	✔
	Diode/Capacitance	✔	✔
	AC or DC µA and mA	✔	✔
	AC or DC A	✔	✔
	T1 temperature/T2 and T1–T2 temperature[a] or AC/DC mV (when enabled from the Setup "CoUP" menu)	✔	✔

[a] For U1242C only.

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

Refer to the *U1241C/U1242C User's Guide* for a complete list and description of all rotary switch labels.

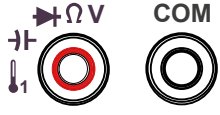
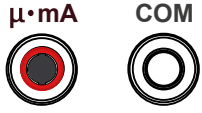
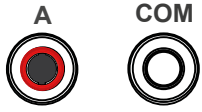
Using the Keypad

Legend	Key response when pressed for:	
	Less than 1 second	More than 1 second
	Enables the frequency test mode.	Starts, stops, and exits the Max/ Min/Avg recording.
	Sets the Null/Relative mode.	Toggles on/off non-contact voltage detection (Vsense).
	– Sets a manual range. – Switches between environment temperature compensation (ETC) and non-ETC for temperature measurements. – Changes the Vsense detector sensitivity.	Enables autoranging.
	– Freezes the present reading in the display (TrigHold mode). – Automatically freezes the present reading once the reading is stable (AutoHold mode; when enabled from the multimeter's Setup mode). Press  again to exit this mode. – Stores a record of the measured signal and exports it via the multimeter's optical communication port. – Restarts the Max/Min/Avg recording.	Starts and stops data logging.
	Turns the backlight on/off.	Turns the flashlight on/off.

Legend	Key response when pressed for:	
	Less than 1 second	More than 1 second
	– Switches between the regular and shifted (icon printed in **orange**) functions. – Enables the Scan mode for temperature measurements (U1242C only).	– Enters and exits the data log review mode (with the Hold mode disabled). – Exits the TrigHold or AutoHold mode. – Enters the Setup mode (while turning the rotary switch from OFF to on), and exits the Setup mode.

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

Hazardous Signal 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)	≥ +30 V or +OL (voltage overload)	≤ –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  symbol as an early precaution when the measured current has reached the maximum fuse rating as follows:

Measurement	DC		AC
A	≥ +11 A or +OL (current overload)	≤ –11 A or –OL	≥ 11 A or OL
μA/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 seconds time limitation to avoid blowing the multimeter's fuse.**

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-Er or HAEr until the test lead is removed. The beeping will stop automatically after 5 seconds even if the test lead is not removed.

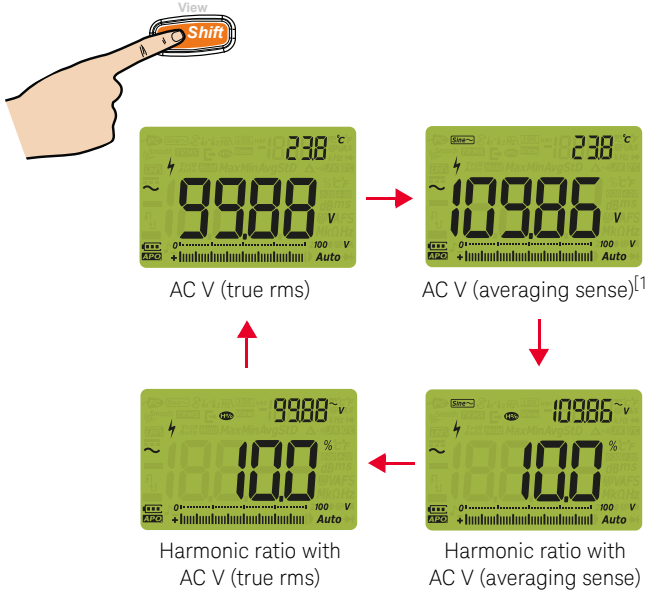
– the rotary switch is set to the current measurement position but no lead is inserted into its respective input terminal. The secondary display will show LEAd, and the warning alert will stop after 3 seconds approximately.

Voltage Measurements

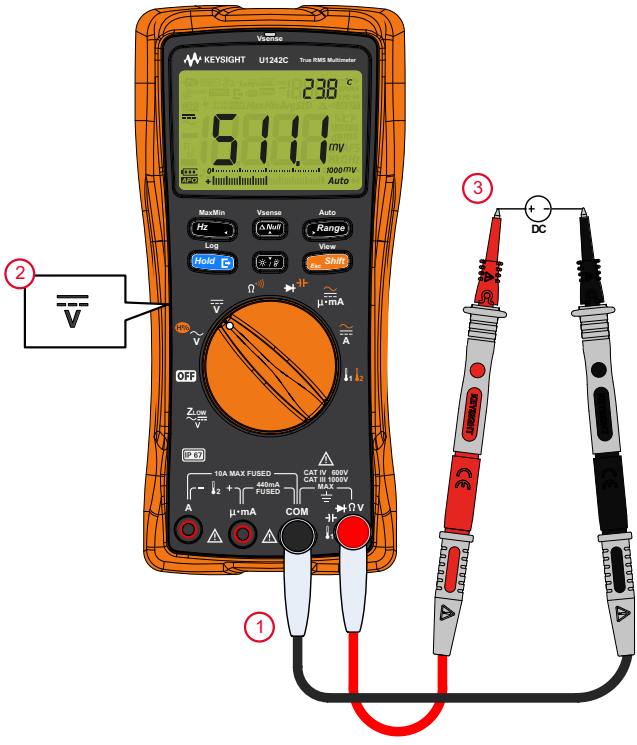
Measuring AC voltage

Measuring harmonic ratio (U1242C only)

The harmonic ratio function indicates the deviation of non-sinusoidal to sinusoidal waveform from the range of 0% to 100%, which indicates the presence of harmonics. A higher harmonic ratio means more harmonics are present on the signal.



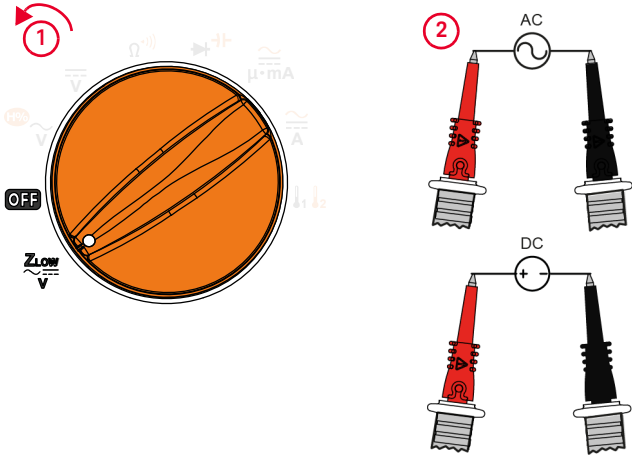
[1] Averaging sense AC measurements apply to sine wave inputs when measuring linear loads.


KEYSIGHT
U1242C
True RMS Multimeter
23.8
511.1
mV
Auto
MaxMin
Vsense
Auto
Hz
Null
Range
Log
View
Hold
Shift
OFF
10A MAX FUSED
440mA FUSED
CAT IV 600V
CAT III 1000V
MAX
A
μ·mA
COM
Ω V
DC
2
3
1

Using Z_{LOW} for voltage measurements (U1242C only)

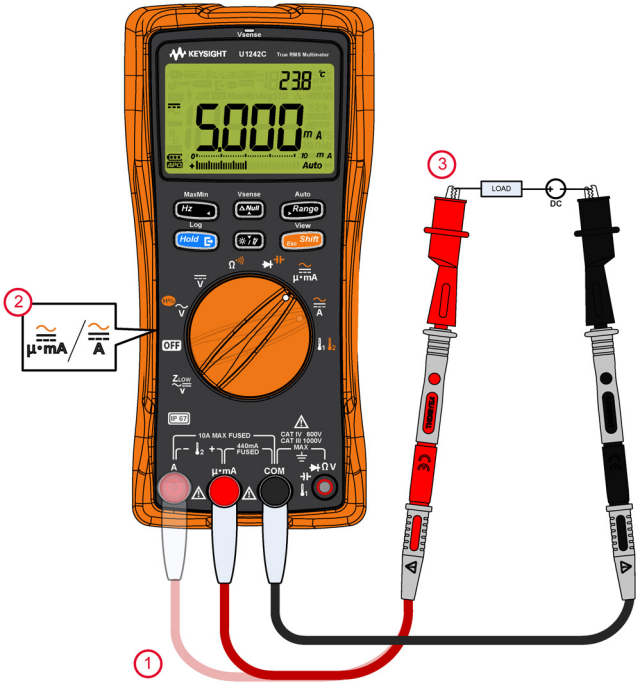
Use the low input impedance (Z_{LOW}) function to remove stray/induced voltages from your measurements.

CAUTION **Do not use the Z_{LOW} function to measure voltages in circuits that could be damaged by this function's low impedance (≈2 kΩ).**

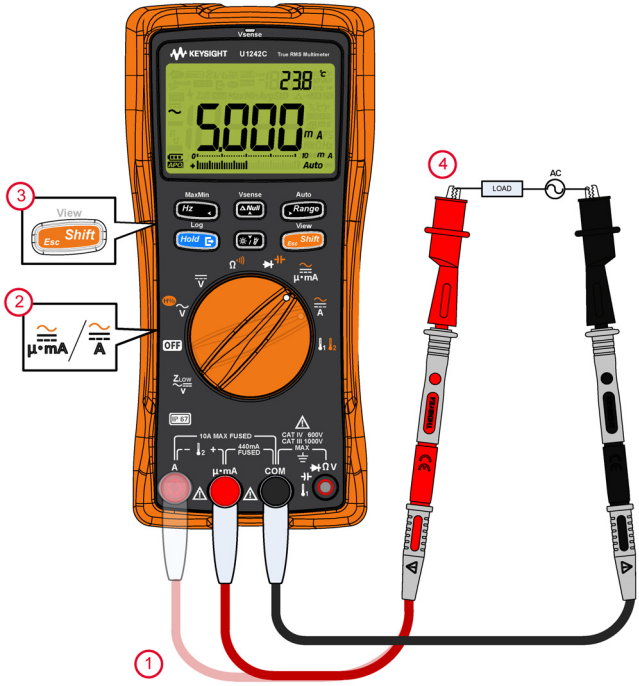


WARNING Never attempt an in-circuit current measurement where the open-circuit potential to earth is >1000 V.

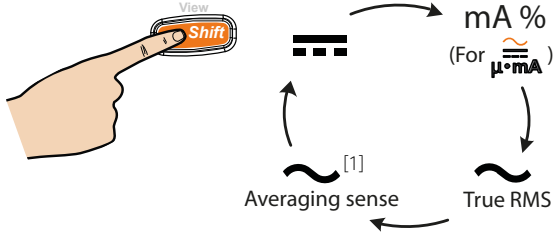
Measuring DC current



Measuring AC current

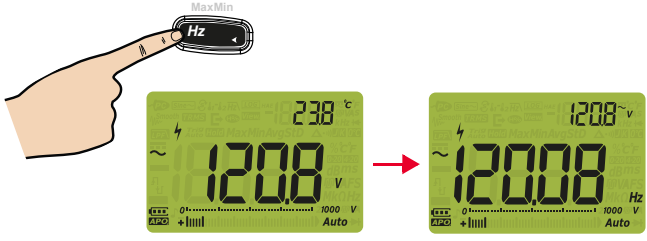


Cycling through different current measurements

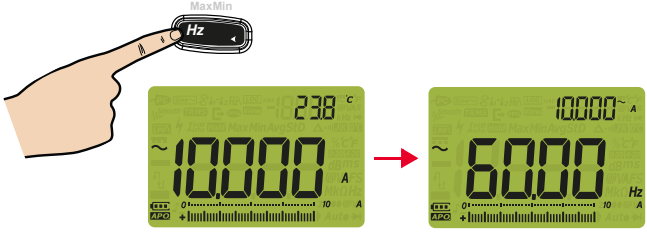


[1] For U1242C only.

Measuring voltage frequency

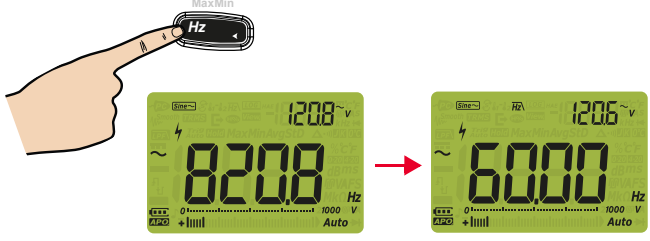


Measuring current frequency

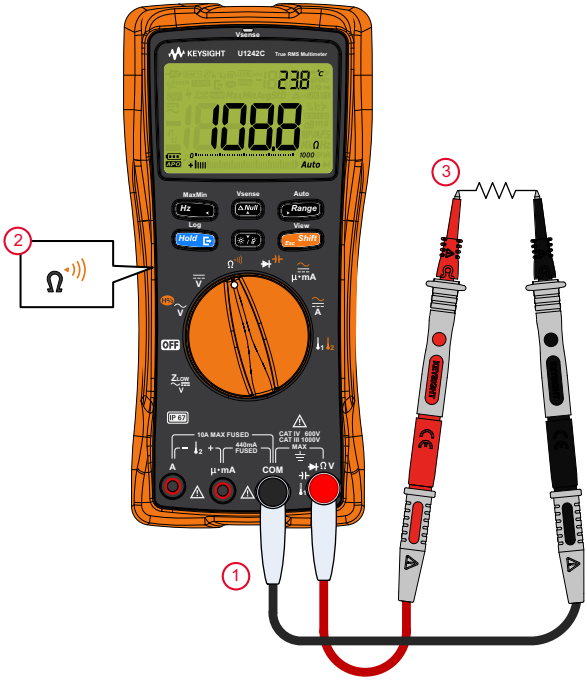


Using a low pass frequency filter ($\overline{Hz}$\) for frequency measurements

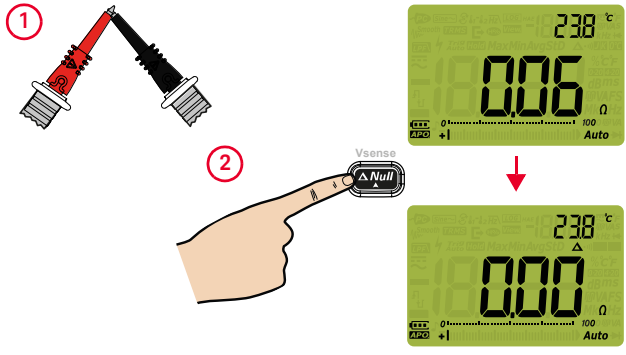
The filter blocks unwanted frequency (~ 1 kHz) while the multimeter continues measuring voltage/current via the selected averaging sense or true rms function.



Resistance Measurement

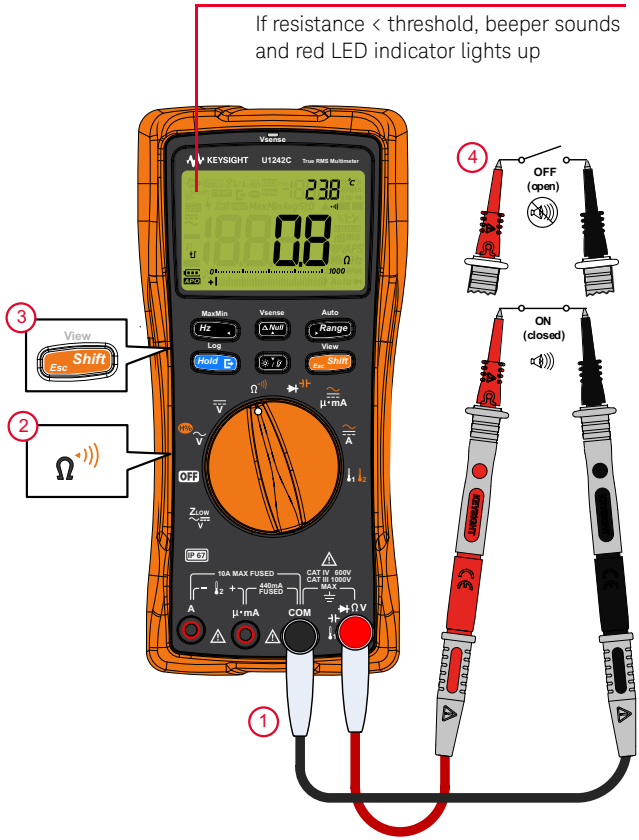


Removing test lead resistance



Continuity Test

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.

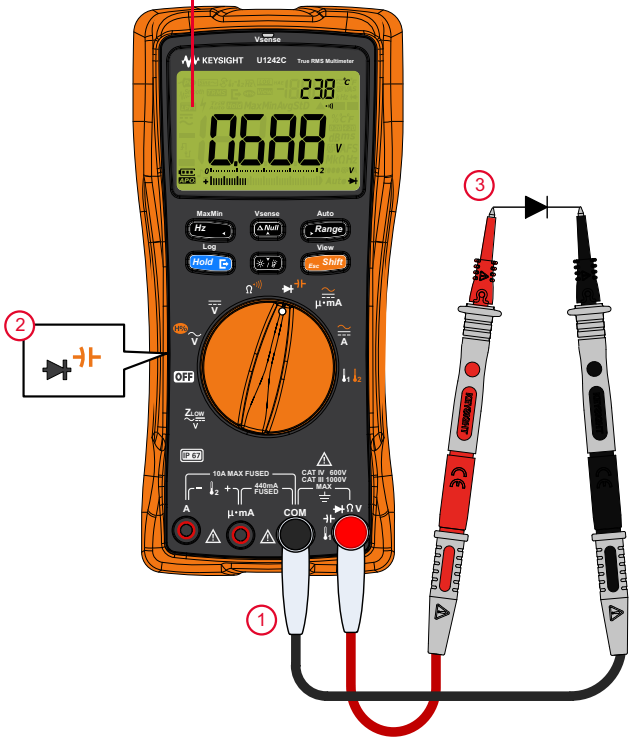


Diode Test

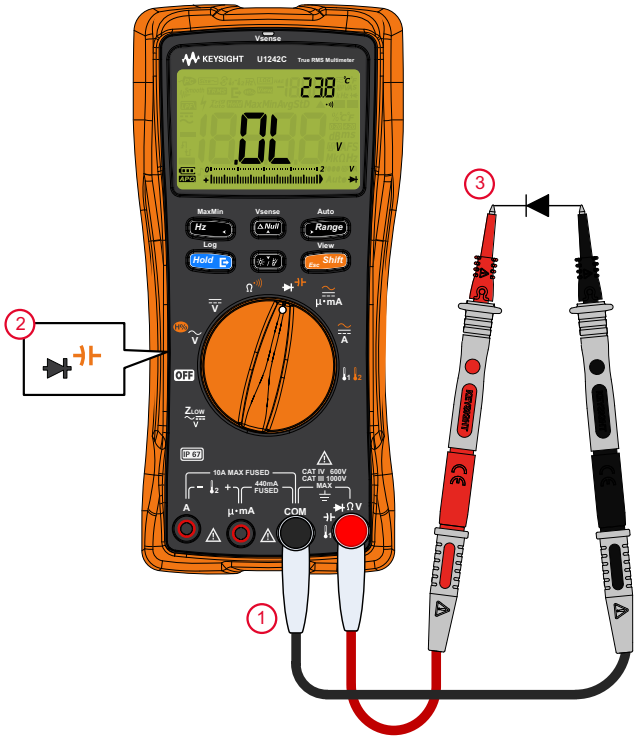
Forward bias

Beeper will emit a:

- continuous beep (for 0.3 V to 0.8 V)
- repeated beep (for <0.05 V)

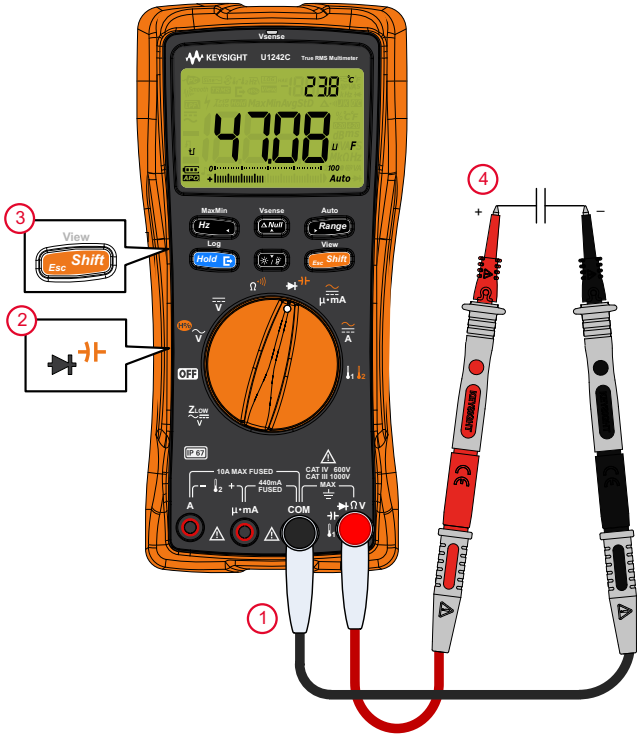


Reverse bias



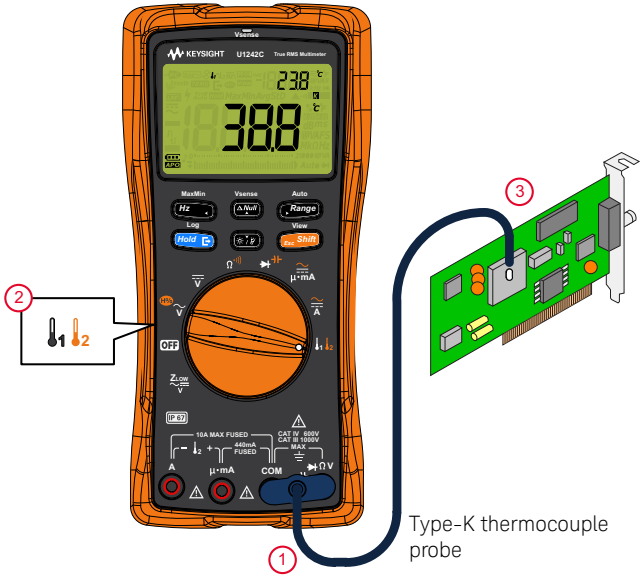
Capacitance Measurement

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.

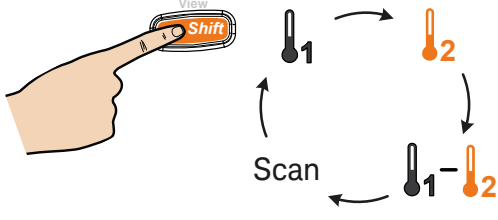


Temperature Measurement

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



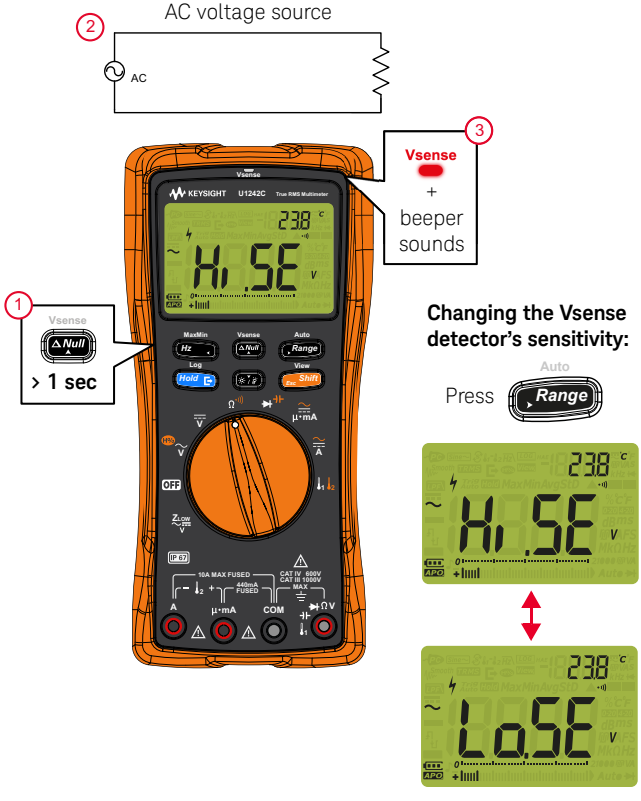
Cycling through different temperature measurements (U1242C only):



Non-Contact Voltage Detector (Vsense) (U1242C only)

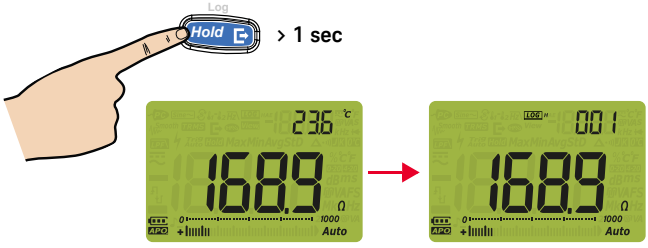
WARNING

- Voltage could still be present even if there is no Vsense alert indication. Do not rely on the Vsense detector with shielded wires. Never touch live voltage or conductor 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.



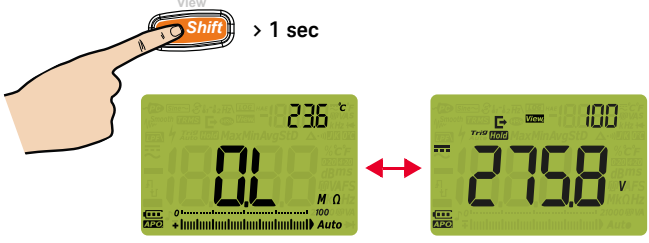
Measurement Data Recording and Review

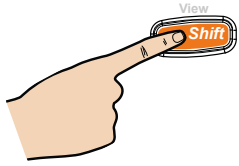
Recording measurement data (manual log)

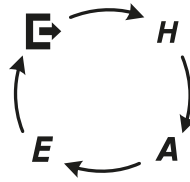


NOTE Refer to the *U1241C/U1242C User's Guide* for other data recording options.

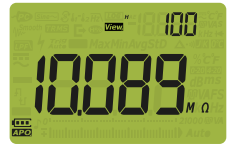
Viewing the recorded data







Export logging data



Manual logging data

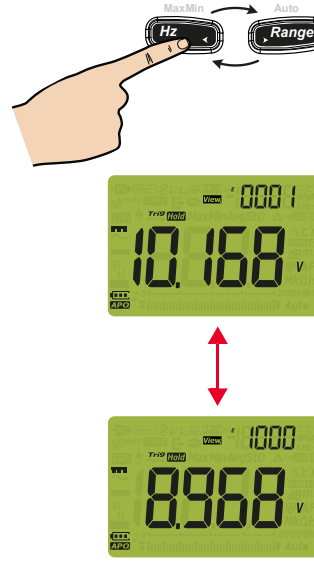
Interval logging data

Event logging data

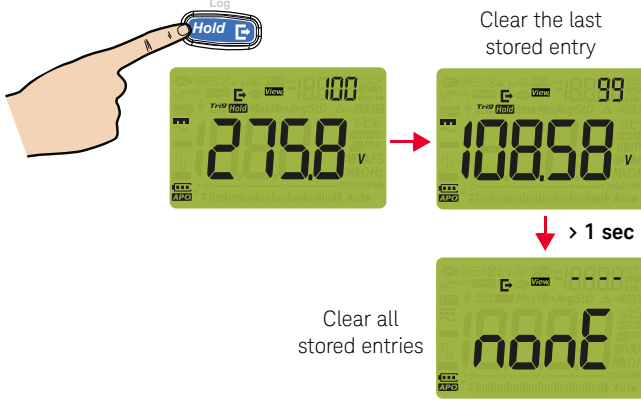
Viewing stored entries

Viewing next and previous stored entries

Viewing first and last stored entries



Clearing stored entries



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