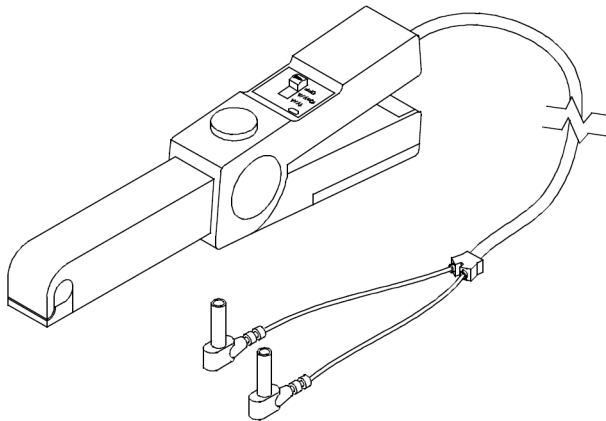


Keysight 34134A AC/DC DMM Current Probe



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Safety Information

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 Symbols

The following symbols on the instrument and in the documentation indicate precautions which must be taken to maintain safe operation of the instrument.

	Caution, risk of electric shock		Equipment protected throughout by double insulation or reinforced insulation
	Protective earth (ground) terminal		

Safety Information

Read the information below before using this instrument.

The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards for design, manufacture, and intended use of the instrument. Keysight Technologies assumes no liability for the customer's failure to comply with these requirements.

This apparatus has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Measuring Apparatus, and has been supplied in a safe condition.

To ensure safe operation and to keep the product safe, the information, cautions, and warnings in this operating manual must be heeded. In addition, note the external markings on the instrument that are described under [Safety Symbols](#).

WARNING

SHOCK HAZARD

- Connect the probe to the DMM or voltage measuring instrument before clamping the probe around a conductor.
 - Never use the probe on circuits rated higher than 660 V.
 - Never leave the probe clamped around a conductor while not connected to a voltage measuring instrument or DMM.
 - Carefully center the conductor inside the probe jaws and make sure that the probe is perpendicular to the conductor before closing the jaws.
 - Avoid, if possible, the proximity of other conductors which may create noise.
 - Check the magnetic mating surfaces of the probe jaws; these should be free of dirt, rust, or other foreign matter.
 - Do not use a probe which is cracked, damaged or has defective leads.
-

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1 Getting Started

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34134A AC/DC DMM Current Probe

The 34134A Current Probe measures low DC or AC from 10 mA to 50 A DC, 40 A AC. This battery-powered clamp-on probe may be used with digital multimeters, voltmeters, or other voltage-measuring instruments. The probe jaws clamp round the conductor under test, allowing current measurements without breaking the circuit. Hall sensor technology senses the magnetic field produced by the current measured, and generates a millivolt DC or AC output signal. The narrow jaw is designed for optimum use in crowded wiring in industrial and automotive environments.

Compatibility

The 34134A Current Probe is compatible with any DMM, or other voltage measuring instrument which has the following features:

- Range and resolution capable of displaying 1 mV of input.
- Voltmeter accuracy (uncertainty) of 0.75% or better to take full advantage of the accuracy of the probe.
- Minimum input impedance of 100 k Ω (1 V/A range) or 10 k Ω (10 mV/A range).
- Input jacks that accept 4mm shrouded banana plugs.

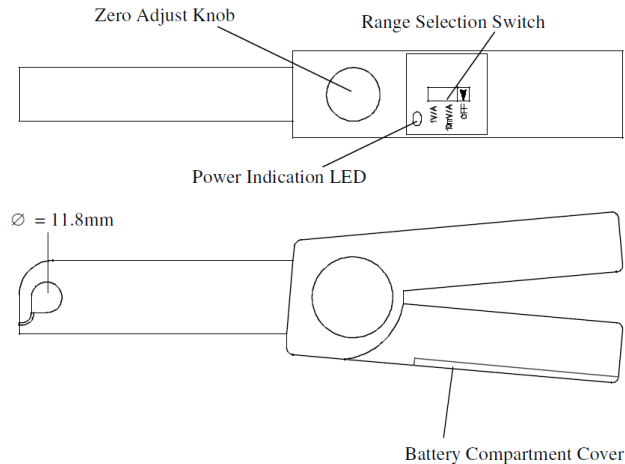


Figure 1-1 Control and connector identification

Inspect the Probe

- Inspect the shipping container for damage.
 - Keep a damaged shipping container or cushioning material until the contents of the shipment have been checked for completeness and the probe has been checked mechanically and electrically.
- Inspect the instrument.
 - If there is mechanical damage or defect, or if the probe does not operate properly or pass performance tests, notify your Keysight Sales Office.
 - If the shipping container is damaged, or the cushioning materials show signs of stress, notify the carrier as well as your Keysight Sales Office. Keep the shipping materials for the carrier's inspection. The Keysight office will arrange for repair or replacement at Keysight's option without waiting for claim settlement.

Specifications and Characteristics

Operating and environmental characteristics of the 34134A Current Probes are shown below.

Specifications	1 V/A Range (1 mV/mA)	10 mV/A Range
Current Range	DC: 10 mA to 2 A AC: 10 mA to 1.5 A	DC: 100 mA to 80 A AC: 100 mA to 60 A
Output Signal (AC/DC)	1 mV/mA (2 V @ 2 A)	10 mV/A
Accuracy ^[a]	±2% reading ± 5 mA	500 mA to 50 A DC/40 A AC: ±4% reading ±20 mA 50 to 80 A DC: ±12% reading 0 to 60 A AC: ±12% reading
Frequency Range	DC to 8 kHz @ -3 dB	DC to 8 kHz
Phase Shift	DC to 65 Hz: 1 °	DC to 65 Hz: 1 °
Minimum Input Resistance of Instrument	100 kΩ	100 kΩ
Noise	DC to 1 Hz: 1.5 mV 1 Hz to 10 kHz: 14 mV 0 kHz to 100 kHz: 18 mV	DC to 1 Hz: 15 μV 1 Hz to 10 kHz: 140 μV 0 kHz to 100 kHz: 180 μV
Slew Rate @ 5 A	120 mV/μs	5.5 mV/μs

[a] Accuracies are given for an ambient temperature of 23 °C ±3 °C, relative humidity of 20 to 75%, conductor centered in jaw window, probe zeroed, no hysteresis in DC, DC to 40 to 100Hz sine wave (1mV/mA range) or DC and 40 to 1 kHz sine wave (10mV/A range), 1 minute warm-up, battery at 9V, appropriate load impedance, magnetic field <40A/m and no common mode.

Typical Frequency Response Curve

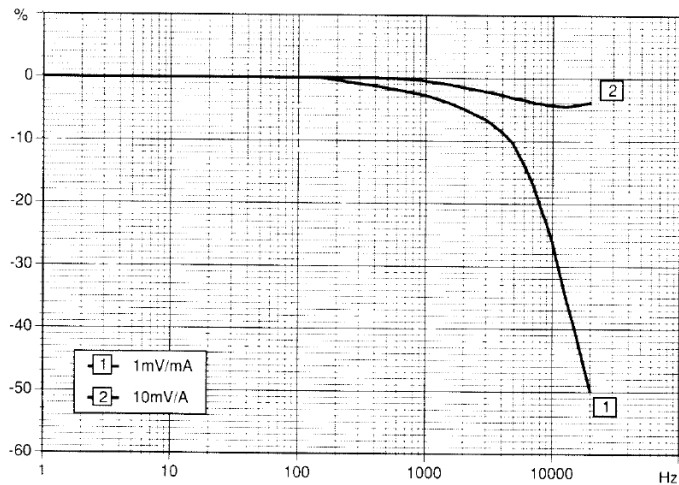


Figure 1-2 Voltage vs frequency response curve

Environmental Characteristics

Operating temperature	0 to 50 °C
Storage temperature	-30 to 80 °C
Operating relative humidity	0 to 50 °C, 0 to 85% relative humidity
Temperature coefficient	800 ppm per °C +10 mA/°C typical from -10 to 50 °C
Altitude	Operating: 0 to 2000 m Non-operating: 0 to 12,000 m

Mechanical Characteristics

Zero adjustment	20 turn potentiometer
Maximum cable diameter	11.8 mm
Dimensions	67 x 231 x 36 mm
Weight	330g with battery
Color	Grey

1 Getting Started

Environmental Characteristics	
Material	Fiberglass charged polycarbonate
Output cable	1.5m double insulated lead with shielded banana plugs
Mechanical Characteristics	
Working voltage	600 V CAT III
Case protection	IP20 per IEC 529
Drop test	1m according to IEC 68-2-32
Mechanical shock	100 G: test per IEC 68-2-27
Vibration	Test per IEC 68-2-6 frequency range 10 Hz to 55 Hz, amplitude: 0.15mm



This symbol signifies that the 34134A AC/DC DMM Current Probe is protected by double or reinforced insulation. Only use specified replacement parts when servicing the instrument.



This symbol signifies CAUTION! and requests that the user refer to the user manual before using the instrument.

Operation

- 1 Connect the probe to the multimeter or other instrument.

CAUTION

Be sure to observe the polarities: red = positive terminal, black = common terminal.

- 2** Select the multimeter range which best corresponds to the measured current. For better reading stability, you may use the DMM 2 Volt range and let the probe “warm up” for one minute before zeroing.
The Current Probe has a dual output, DC V output in DC and AC V output in AC.
 - The “1 V/A” range has an output signal of 1 mV/mA AC/DC with an output of 2 volts representing 2 amps present in the conductor being measured.
 - The “10 mV/A” range has an output signal of 10 mV/A AC/DC with an output of 500 millivolts representing 50 amps present in the conductor being measured.
- 3** Zero the probe in DC and in DC coupled AC measurements.
When the 34134A Current Probe has been used for a current measurement and then removed from the conductor, a small amount of residual magnetism often remains in the core. This residual magnetism will cause the voltmeter to show a small DC reading even though there is no current passing through the jaws of the probe. The residual magnetism should not cause a problem for AC current measurement because the AC voltage function in most multimeters is AC coupled. DC offset caused by the residual magnetism will contribute to reading errors, but can be minimized by using the zero adjust knob to show a reading of $0 \pm$ a few counts on the multimeter (probe not clamped on a conductor).
There will always be some instability and noise generated by the Hall sensor, the earth magnetic field and environmental noise. This is particularly noticeable on the most sensitive range, 1 V/A (1 mV/mA), where you may have up to 5 mV of uncertainty, which cannot be “zeroed out.” “Zero” the probe while it is connected to the DMM and on the range to be used. Let the probe warm-up for one minute before zeroing. Turn the zero adjustment knob until the probe is zeroed.
- 4** Observe the output polarities for DC measurement.
- 5** Clamp the probe on the conductor to be measured and read the current flowing directly on your meter.
The output of the probe is 10 mV/A AC/DC or 1 mV/mA AC/DC. If your meter indicates a negative reading during DC measurements, this simply means that the current flow is in the opposite direction of the arrows marked “I” on the probe or that the probe connections are reversed (polarity).
- 6** After measurement, turn the probe OFF.

Calibration

To guarantee that your instrument complies with the factory specifications, we recommend that the 34134A Current Probe be submitted to your local Keysight Service Center at one year intervals for recalibration, or as required by other standards.

Repair

This probe contains no user serviceable parts. Please return to your local Keysight Service Center for repair.

To check/replace the battery

When the probe is turned on, the green LED should light up. If not, replace the 9 V battery.

- 1 Disconnect the probe from the circuit and the DMM.
- 2 Turn the probe “OFF.”
- 3 Unscrew the battery compartment screw and pull out the battery compartment cover.
- 4 Replace the battery and put the cover back up.

CAUTION

Do not replace the battery while the probe is in use.

Cleaning the probe

Be sure that the mating surfaces of the jaw are free of dirt or foreign matter. If they are rusted, gently clean with a soft, lightly oiled cloth.



This information is subject to change without notice. Always refer to the English version at the Keysight website for the latest revision.

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