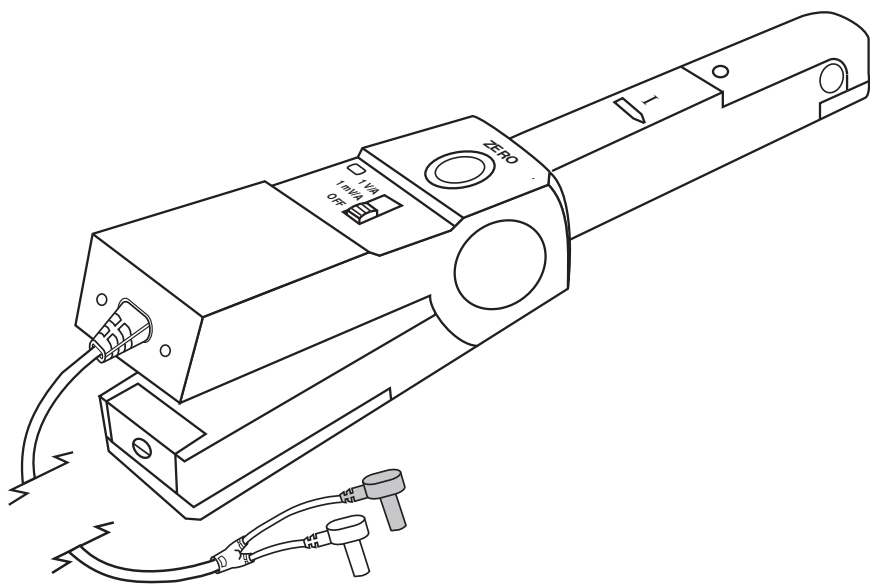


AC/DC Current Probe Model SL201

USER MANUAL



Limited Warranty

The AC/DC Current Probe Model SL201 is warranted to the owner for a period of two years from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

For full and detailed warranty coverage, please read the Warranty Coverage Information, which is attached to the Warranty Registration Card (if enclosed) or is available at www.aemc.com. Please keep the Warranty Coverage Information with your records.

What AEMC® Instruments will do:

If a malfunction occurs within the warranty period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material

YOU CAN NOW REGISTER ON LINE AT:
www.aemc.com

Warranty Repairs

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive • Dover, NH 03820 USA
Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: All customers must obtain a CSA# before returning any instrument.

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These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Read the instruction manual completely and follow all the safety information before attempting to use or service this instrument.
- Use caution on any circuit: Potentially high voltages and currents may be present and may pose a shock hazard.
- Read the safety specifications section prior to using the current probe. Never exceed the maximum voltage ratings given.
- Safety is the responsibility of the operator.
- ALWAYS connect the current probe to the display device before clamping the probe onto the sample being tested.
- ALWAYS inspect the instrument, probe, probe cable, and output terminals prior to use. Replace any defective parts immediately.
- NEVER use the current probe on electrical conductors rated above 600V in overvoltage category III (CAT III). Use extreme caution when clamping around bare conductors or bus bars.

International Electrical Symbols



This symbol signifies that the current probe is protected by double or reinforced insulation. Use only factory 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.



This is a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted.

Definition of Measurement Categories

- Cat. IV:** For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters
- Cat. III:** For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.
- Cat. II:** For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.

Receiving Your Shipment

Upon receiving your shipment, be sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor with a detailed description of any damage. Save the damaged packing container to substantiate your claim.

Packaging

The AC/DC Current Probe Model SL201 (Cat. #1201.40) is shipped with one 9V battery and this user manual.

Compatibility

The AC/DC Current Probe Model SL201 is compatible with any DMM, voltmeter, or other voltage-measuring instrument which has the following features:

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

Description

AC/DC Current Probe Model SL201 measures low DC or AC from 50mA to 150ADC/120AAC. This battery-powered clamp-on probe may be used with digital multimeters, voltmeters, or other voltage-measuring instruments. The probe jaws clamp around 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.

Control and Connector Identification

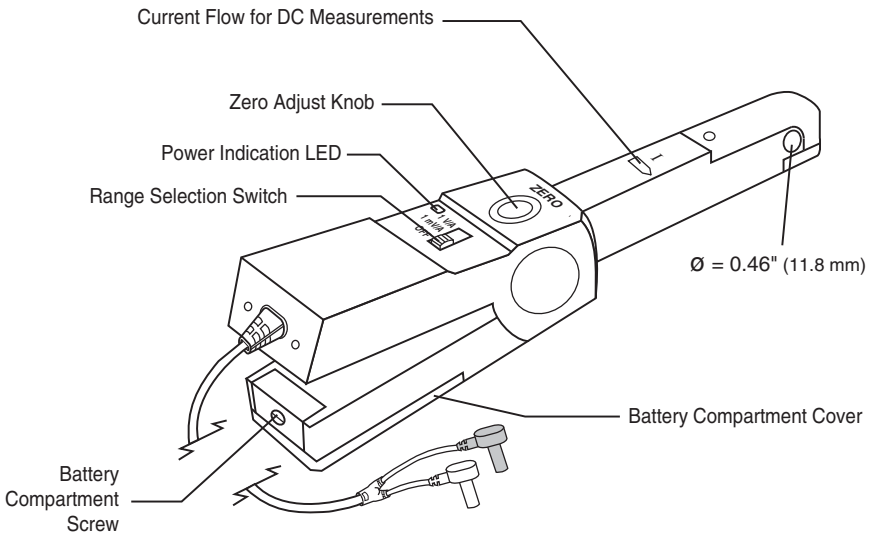


Figure 1

Specifications

ELECTRICAL SPECIFICATIONS

Current Range:

50mA to 150AAC/DC in two ranges

Output Signal:

1mV/mA and 1mV/A AC or DC

Accuracy and Phase Shift*:

Range	1 mV/mA (1 V/A)	1mV/A
Current Range	50mA to 2ADC 50mA to 1.5AAC	500mA to 150A
Output Signal	1V at 1AAC/DC	100mV at 100AAC/DC
Accuracy % of Reading	2% of reading \pm 20mA	500mA to 100AAC/DC: 1.5% rdg. \pm 30mA 100 to 150ADC: \pm 3% rdg 100 to 120AAC: \pm 3% rdg
Frequency Range	DC to 2kHz	DC to 8kHz
Phase Shift	DC to 65Hz: 3°	DC to 65Hz: 1°
Min Load Impedance	100k Ω	10k Ω
Noise	DC to 1Hz: 3 mV 1Hz to 10kHz: 10mV 10 to 100kHz: 18mV	DC to 1Hz: 3 μ V 1Hz to 10kHz: 10 μ V 10 to 100kHz: 18 μ V

Working Voltage: 600V max (conductor to ground)**Float Voltage:** 600V max (output to ground)

(*Reference conditions: 23°C \pm 5°K, 20 to 75% RH, 48 to 65 Hz, external magnetic field < 40 A/m, no external current carrying conductor, test sample centered, load impedance 1 M Ω .)

MECHANICAL SPECIFICATIONS

Operating Temperature:

32° to 122°F (0° to 50°C)

Storage Temperature:

-22° to 176°F (-30° to 80°C)

Temperature Influence: < 0.2% per °C

Operating Relative Humidity:

10° to 30°C: 85% ±5% RH

(without condensation)

40° to 50°C: 45% ±5% RH

(without condensation)

Battery:

9V alkaline (NEDA 1604A, IEC 6LR61)

Battery Life: 68 hours typical

Typical Consumption: 6mA

Low Battery:

Green LED when $\geq 6.5V$

Maximum Cable Diameter:

0.46" (11.8mm)

Zero Adjustment:

20 turn potentiometer

Handle:

Lexan® 920 A, UL 94 V2

Case Protection:

IP20 per IEC 529

Drop Test:

1.0 m on 38mm of oak on concrete;

test according to IEC 1010

Mechanical Shock:

100G, test per IEC 68-2-27

Vibration:

Test per IEC 68-2-6,

Frequency Range:

10Hz to 55Hz

Amplitude: 0.15mm

Dimensions:

9.09 x 1.42 x 2.64" (231 x 36 x 67mm)

Weight:

11.6 oz (330g) with battery

Color:

Dark gray

Output:

5 ft (1.5m) lead with safety 4mm banana plugs

SAFETY SPECIFICATIONS

Electrical:

- 600V Category III, Pollution: 2

- 300V Category IV, Pollution: 2

Double insulation or reinforced insulation between primary or secondary and outer case of handle per IEC 1010-2-32

Electromagnetic Compatibility



EN 50081-1 Class B

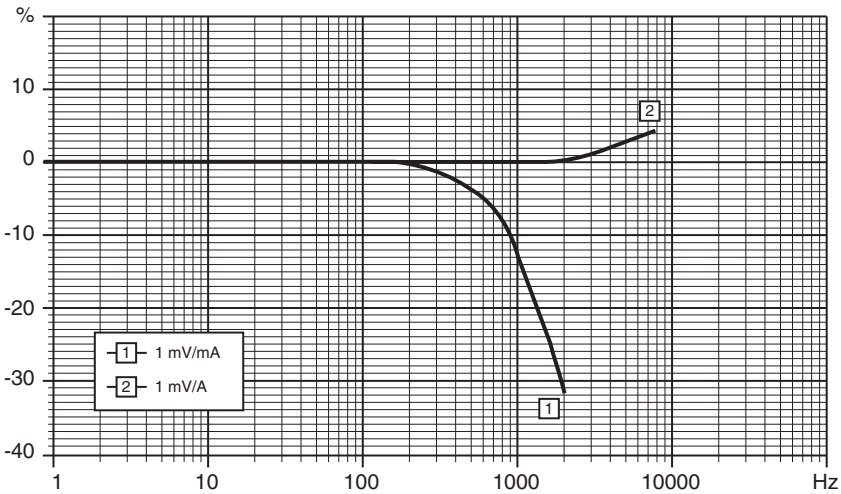
EN 50082-2 Electrostatic discharge IEC 1000-4-2

Radiated field IEC 1000-4-3

Fast transients IEC 1000-4-4

Magnetic field at 50/60 Hz IEC 1000-4-8

Frequency Response Curves (Typical)



Operation

Connection

Connect the current probe to the multimeter or other instrument. Be sure to observe the polarities: red = positive terminal, black = common terminal. The Current Probe Model SL201 has a dual output, DC V output in DC and AC V output in AC. The “1V/A” range has an output signal of 1mV/mA AC/DC with an output of 2 volts representing 2 amps present in the conductor being measured. The “1mV/A” range has an output signal of 1mV/A AC/DC with an output of 50 millivolts representing 50 amps present in the conductor being measured. 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.

Zeroing the Probe

When the Current Probe Model SL201 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 (see Figure 1) 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 1V/A (1mV/mA) where you may have up to 20mV of uncertainty (see accuracy) 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 adjust knob until the probe is zeroed.

Current Measurement

Select the appropriate range on your multimeter. Zero the probe in DC and in DC coupled AC measurements. Observe the output polarities for DC measurement. Clamp the probe on the conductor to be measured and read the current flowing directly on your meter. The output of the probe is 1mV/A AC/DC or 1mV/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 arrow marked “I” on the probe or that the probe connections are reversed (polarity). After measurement, turn the probe off.

Maintenance



Warning

- For maintenance use only specified replacement parts.
- Avoid electrical shock: do not attempt to perform any servicing unless you are qualified to do so.
- Avoid electrical shock and/or damage to the instrument: do not get water or other foreign agents into the electronic module.
- Also see warning on page 4.

Cleaning

Be sure that mating surfaces of the jaw are free of dirt or foreign matter. If they are rusted, gently clean with a soft, lightly oiled cloth. Do not leave excessive oil residue.

Battery Replacement

When the probe is turned on, the green battery indication LED should light up. If not, replace the 9V battery (see figure 1).

To replace the battery, disconnect the probe from the circuit and the DMM. Turn the probe "OFF". Unscrew the battery compartment screw and pull out the battery compartment cover. Replace the battery and put the cover back on. Do not replace the battery while probe is in use.

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be submitted to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (includes calibration certificate plus recorded calibration data).

Chauvin Arnoux[®], Inc.
d.b.a. AEMC[®] Instruments
15 Faraday Drive
Dover, NH 03820 USA
Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: All customers must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, fax or e-mail our technical support hotline:

Chauvin Arnoux[®], Inc. d.b.a. AEMC[®] Instruments
Phone: (800) 945-2362 (Ext. 351) • (603) 749-6434 (Ext. 351)
Fax: (603) 742-2346
E-mail: techsupport@aemc.com



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