

**OPERATION**

Please make sure that you have already read and fully understand the WARNING section on page 1.

**Making Measurements with the AC Current Probe Model LM103**

Connect the clamp to the meter, ensuring correct polarity: black safety plug on the negative, and red safety plug on the positive. Set the multimeter to the mV range. When opening the clamp, press on the side of the lead (do not allow your hand past the guard). Close the jaws around the conductor, respecting the current direction (indicated by the engraved arrow on the jaws of the clamp).

Ensure the clamp jaws are fully closed and that no foreign bodies are caught inside. For best accuracy, avoid if possible the proximity of other conductors which may create noise. The current measured in A is equal to the value displayed in mV.

**Tips for Making Precise Measurements**

- When using a current probe with a meter, it is important to select the range that provides the best resolution. Failure to do this may result in measurement errors.
- Make sure that probe jaw mating surfaces are free of dust and contamination. Contaminants cause air gaps between the jaws, increasing the phase shift between primary and secondary. It is very critical for power measurement.

**MAINTENANCE:****Warning**

- For maintenance use only original factory replacement parts.
- To avoid electrical shock, do not attempt to perform any servicing unless you are qualified to do so.
- To avoid electrical shock and/or damage to the instrument, do not get water or other foreign agents into the probe

**Cleaning**

To ensure optimum performance, it is important to keep the probe jaw mating surfaces clean at all times. Failure to do so may result in error in readings. To clean the probe jaws, use very fine sand paper (fine 600) to avoid scratching the jaw, then gently clean with a soft oiled cloth.

(Or contact your authorized distributor)

**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 use or application of this instrument, please contact our technical hotline.

**LIMITED WARRANTY**

The current probe 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.

# AC Current Probe Model LM103

## User Manual

**DESCRIPTION**

The Model LM103 (Cat. #2153.05) is the latest in compact AC current probes. Designed to meet the most stringent demands in industry and electrical contracting, it also meets the latest safety and performance standards. The probe has a measurement range of up to 200Arms which make it the perfect tool for measurements with DMMs, recorders, power and harmonic meters. The Model LM103 is compatible with any multimeter or other measurement instrument that is capable of displaying 1mV of output per amp of measured current. When used with an AC voltmeter, it enables you to read the current measured directly on the voltmeter.

**WARNING**

The safety warnings are provided to ensure the safety of personnel and proper operation of the instrument. Read the instruction completely.

- Use caution on any circuit: potentially high voltages and currents may be present and may pose a shock hazard.
- Do not use the probe if damaged. Always connect the current probe to the measuring device before it is connected around the conductor
- Do not use on non-insulated conductor with a potential to ground greater than 600V CAT III pollution 2. Use extreme caution when clamping around bare conductors or bus bars.
- Before each use, inspect the probe; look for cracks in housing or output cable insulation.
- Do not use clamp in wet environment or in locations that hazardous gases exist.
- Do not use the probe anywhere beyond the tactile barrier.

**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**

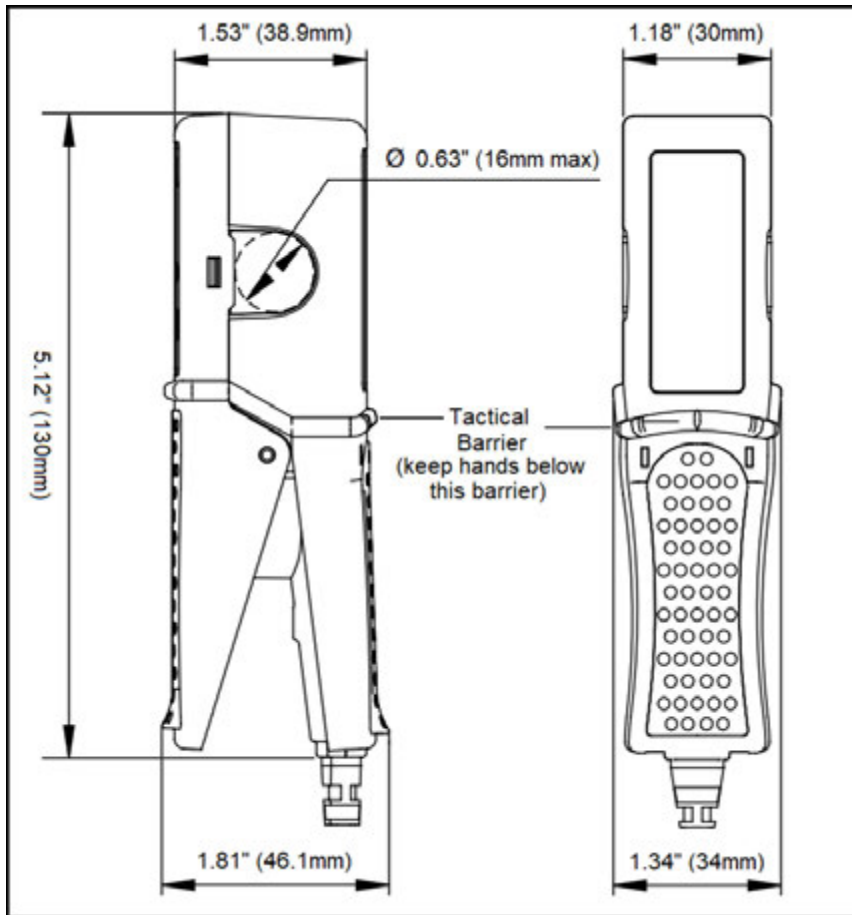
**CAT IV:** For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

**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, make 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 at once, giving a detailed description of any damage.



- Distortion Factor:**  
< 1%, without superimposed DC component
- Load Impedance:**  
≥ 10kΩ
- Influence of Adjacent Conductor:**  
< 2mA/A at 50Hz
- Influence of Conductor Position in Jaw:**  
0.08% @ 50/60Hz
- Influence of Frequency:**  
≤ 1% typical
- Influence of Temperature:**  
≤ 0.2% per 10°K
- Influence of Humidity:**  
10 to 90% RH: <0.1%

- Weight:**  
250g (8.8oz)
- Polycarbonate Material:**  
Jaws: Polycarbonate with 10% fiberglass charge, red UL 94 V0
- Opening Operations - Life:**  
> 50,000
- Operating altitude:**  
< 6500' (2000m)
- Output:**  
Double/reinforced insulated 5 ft (1.5m) lead with two safety 4mm banana plug

**SAFETY SPECIFICATIONS**



**MECHANICAL SPECIFICATIONS**

- Operating Temperature:**  
14° to 122°F (-10° to +50°C)
- Storage Temperature:**  
-40° to 176°F (-40° to +80°C)
- Operating Relative Humidity:**  
85% RH (with linear decrease above 95°F (35°C))
- Maximum Cable Diameter:**  
One Ø 0.63" (16mm)
- Case Protection:**  
IP 20 (EN 60529)
- Drop Test:**  
Test per IEC 68-2-32:  
1.0m drop on 38mm of oak on concrete.

- Electrical:**  
Instrument with double insulation or reinforced insulation between the primary, the secondary and the prehensible part located under the guard as per EN 61010-1, EN 61010-2-031 & EN 61010-2-032 - 600 V category III, pollution degree 2 - 300 V category IV, pollution degree 2.
- Electromagnetic Compatibility:**  
Emission and immunity in an industrial environment according to EN61326-1

- Dimensions:**  
5.13 x 1.81 x 1.34" (130.4 x 46 x 34mm)

**ORDERING INFORMATION**

- AC Current Probe LM103..... Cat #2153.05**
- Accessories:**  
Banana plug adapter (to non-recessed plug) ..... **Cat #1017.45**

**ELECTRICAL SPECIFICATIONS**

- Nominal Range:**  
200A
- Measurement Range:**  
0.1 to 200A
- Output Signal:**  
1mVAC / AAC
- Accuracy and Phase Shift\*:**  
*Accuracy:*  
≤ 1.5% + 0.02A
- Phase Shift:*  
≤ 3°
- \*Reference conditions: 20°C to 26°C, 20 to 75% RH, external magnetic field <40A/m, 48 to 65Hz sine wave, distortion factor less than 1%, no DC component, no external current carrying conductor, test sample centered. Load impedance > 1MΩ.*
- Frequency Range:**  
48 to 10kHz
- Limit Operating Conditions:**  
350A permanent at a frequency ≤ 1kHz.  
200A permanent at a frequency ≤ 8kHz