

AC Current Probe Model MN09

User Manual

DESCRIPTION




The AEMC® Instruments **Model MN09** (Cat. #2129.21) 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 up to 150 ARMs which makes it the perfect tool for measurement with DMMs and recorders without an AC range. The Model MN09 is compatible with any DC voltmeter, multimeter, or other voltage measurement instrument that is capable of displaying 100 mV of output per amp of measured current, voltmeter accuracy 0.75 % or better and an input impedance of $\geq 50 \text{ k}\Omega$.

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 600 V 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

	Signifies that the instrument is protected by double or reinforced insulation.
	CAUTION - Risk of Danger! Indicates a WARNING . Whenever this symbol is present, the operator must refer to the user manual before operation.
	Application or withdrawal authorized on conductors carrying dangerous voltages. Type A current sensor as per IEC 61010-2-032.

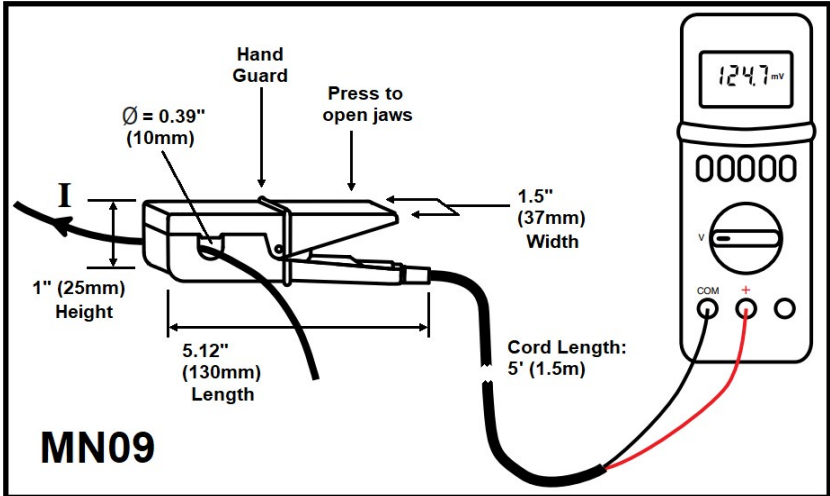
DEFINITION OF MEASUREMENT CATEGORIES (CAT)

- CAT IV:** Corresponds to measurements performed at the primary electrical supply (< 1000 V).
Example: primary overcurrent protection devices, ripple control units, and meters.
- CAT III:** Corresponds to measurements performed in the building installation at the distribution level.
Example: hardwired equipment in fixed installation and circuit breakers.
- CAT II:** Corresponds to measurements performed on circuits directly connected to the electrical distribution system.
Example: measurements on household appliances and 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.

AC CURRENT PROBE - MN09 DRAWING



ELECTRICAL SPECIFICATIONS

Nominal Range: 150 A

Measurement Range:
(1 to 150) A~

Output Signal: 100 mV = 1 A_{AC}

Accuracy:

(1 to 5) A: 10 % ± 0.2 A

(5 to 15) A: 6 % ± 0.2 A

(15 to 40) A: 3 % ± 0.2 A

(40 to 150) A: 4 %

Phase Shift: Not Applicable

*(*Reference conditions: (20 to 26) °C, (20 to 75) % RH, external magnetic field <40 A/m, (48 to 65) Hz sine wave, distortion factor less than 1 %, no DC component, no external current carrying conductor, test sample centered.) Load impedance > 50 kΩ*

Overload: 170 A for 10 min

Frequency Range: (48 to 500) Hz

Open Secondary Voltage: ≤ 30 V

Limit Operating Conditions:
150 A permanently to 500 Hz

Influence of Adjacent Conductor:
< 2 mA/A at 50 Hz

Influence of Conductor Position in Jaw:
< 0.1 % of mV output at 50/60 Hz

Influence of Frequency:
(65 to 500) Hz: < ± 3 % of mV output

Influence of Temperature:
≤ 200 ppm/°K, or 0.2 % of mV output per 10 °K

Influence of Humidity: (10 to 90) % RH,
≤ 0.1 % of mV output

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:
(14 to 122) °F
85 % RH (without roll-off above 122 °F)

Maximum Cable Diameter:
One Ø 0.39 in (10 mm)

Case Protection:

IP 40 (IEC 529)

Dimensions:(4.43 x 1.48 x 1.02) in
(112.5 x 37.5 x 26) mm**Weight:**

180 g (6.5 oz)

Output:Double/reinforced insulated 5 ft (1.5 m) lead
with safety 4 mm banana plug**ORDERING INFORMATION**AC Current Probe MN09 **Cat. #2129.21****Accessories:**Adapter - Set of two, color-coded
(red/black) Female - Female
to Male Leads **Cat. #2115.98**Adapter - Banana (Female) - BNC (Male)
(XM-BB) **Cat. #2118.46****SAFETY SPECIFICATIONS****International Standard:****Safety:**EN 61010-2-032
600 V CAT III**Electromagnetic Compatibility:**

EN 61326-1 industrial immunity

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 MN01

- Connect the black lead of the current probe to **common** and the red lead to the DC voltage input on your DMM or other voltage measuring instrument. The AC current probe has an output of 100 mV_{DC}/AAC. This means that for 150 AAC in a conductor around which the probe is clamped, 15 V_{DC} will come out of the probe leads to your DMM or instrument.
- Select the range which corresponds to the measured current. If the current magnitude is unknown, start with the highest range and work down until the appropriate range and resolution are reached. Clamp the probe around the conductor. Take the reading on the meter and multiply it by 10 to obtain the measured current (e.g, 1000 mV_{DC} Reading = 1000 x 10 = 10,000 mA_{AC} or 10 AAC).
- For best accuracy, avoid if possible, the proximity of other conductors which may create noise.

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 allow water or other foreign agents to come into contact with 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, and then gently clean with a soft, oiled cloth.

REPAIR AND CALIBRATION

To ensure that your instrument meets factory specifications, we recommend that it be sent back 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#). Send an email to repair@aemc.com requesting a CSA#, you will be provided a CSA Form and other required paperwork along with the next steps to complete the request. Then return the instrument along with the signed CSA Form. 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

Phone: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)

Fax: (603) 742-2346 • E-mail: repair@aemc.com

(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:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive • Dover, NH 03820 USA

Phone: (800) 343-1391 (Ext. 351)

Fax: (603) 742-2346 • E-mail: techsupport@aemc.com

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 that it was purchased from. 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.

Full warranty coverage and product registration is available on our website at:
www.aemc.com/warranty.html.

Please print the online Warranty Coverage Information for your records.