AEMC INSTRUMENTS MN01 AC Current Probe User Manual

Contents

AEMC INSTRUMENTS MN01 AC Current Probe

Product Specifications

- **Nominal Range:** 150 A
- **Measurement Range:** (2 to 150) Aac
- **Transformation Ratio:** 1000:1
- **Output Signal:** 1mA/A from (1 to 10)

FAQ

- **Q:** What should I do if I encounter high voltages during measurement?
  - **A:** If high voltages are encountered, immediately disconnect the current probe and seek professional assistance. Do not attempt to continue measurements under high voltage conditions.
- **Q:** Can I use the current probe on circuits above 600 V?
  - **A:** No, it is recommended not to use the current probe on electrical conductors rated above 600 V in overvoltage CAT III for safety reasons. Always adhere to the specified voltage ratings.

DESCRIPTION

The AEMC® Instruments Model MN01 (Cat. #2129.17) is a compact AC current probe.

Designed to meet the most stringent demands in industry and electrical contracting, they also meet the latest safety and performance standards. The probe has a measurement range up to 150 ARMS which makes it a perfect tool for measurement with DMMs, recorders. The Model MN01 is compatible with any AC ammeter, multimeter, or other current measurement instrument with an input impedance lower than 10 Ω. To achieve the stated accuracy, use the probe with an ammeter having an accuracy of 0.75 % or better.

WARNING

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: 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 600 V in overvoltage CAT III. Use extreme caution when clamping around bare conductors or bus bars.

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 s ensor as per IEC 61010-2-032.
	This symbol signifies a voltage limiting circuit.

DEFINITION OF MEASUREMENT CATEGORIES (CAT)

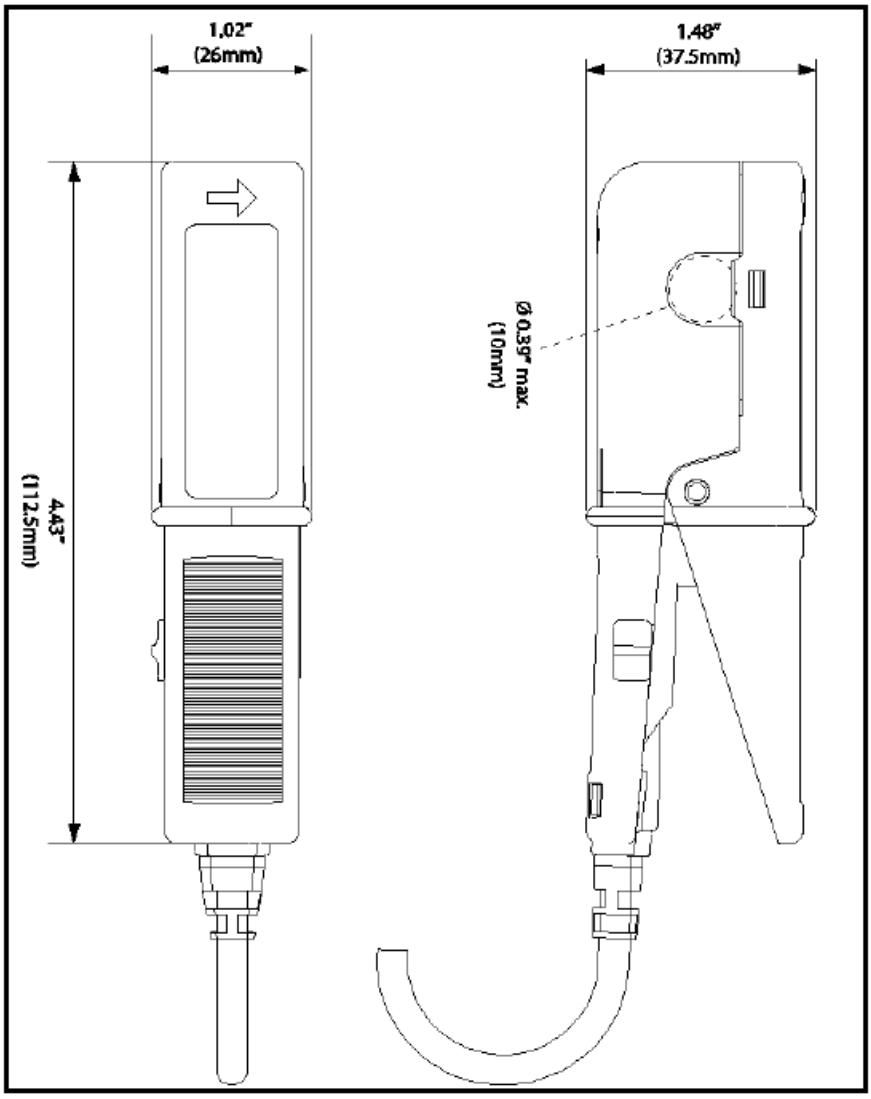
- **CAT IV:** Corresponds to measurements performed at the primary electrical supply (< 1000 V).
  - **Example:** primary overcurrent protection devices, ripple control units, and meters.
- **CAT III:** Corresponds to measurements performed in the building installation at the distribution level.
  - **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.

CURRENT PROBE

CURRENT PROBE – MN01 DRAWING



SPECIFICATIONS

ELECTRICAL SPECIFICATIONS

- **Nominal Range:** 150 A
- **Measurement Range:** (2 to 150) Aac
- **Transformation Ratio:** 1000:1
- **Output Signal:** 1mA/A from (1 to 10) Ω
- **Accuracy and Phase Shift*:**
  - **Accuracy 1 Ω load:** ≤ 2.5 % Reading ± 0.15 A
  - **Accuracy 10 Ω load:** ≤ 3 % Reading ± 0.15 A
  - **Phase Shift:** Not Specified

  ***Reference conditions:** (18 to 28) °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 1 Ω or 10 Ω
- **Overload:** 170 A for 10 min ON, 30 min OFF
- **Frequency Range:** (48 to 500) Hz
- **Open Secondary Voltage:** ≤ 30 V
- **Working Voltage:** 600 VRMS
- **Common Mode Voltage:** 600 VRMS

- **Influence of Adjacent Conductor:** <2 mA/A at 50 Hz
- **Influence of Conductor Position in Jaws:** <0.1 % of mA output at 50/60 Hz
- **Influence of Frequency:** <2 % of mA output from (65 to 500) Hz
- **Influence of Temperature:** ≤0.2 % per 10 °K
- **Influence of Humidity:** (10 to 90) % RH, ≤0.1 % of mA.

MECHANICAL SPECIFICATIONS

- **Operating Temperature:** (14 to 122) °F (-10 to +50) °C
- **Storage Temperature:** (-40 to 176) °F (-40 to +80) °C
- **Maximum Cable Diameter:** One Ø 0.39 in (10 mm)
- **Case Protection:** IP 40 (IEC 529)
- **Drop Test:**
  - **Test per IEC 68-2-32:** 1.0 m drop on 38 mm of Oak on concrete
- **Mechanical Shock:** Test per IEC 68-2-27
- **Vibration:** Test per IEC 68-2-6
- **Dimensions:** (4.43 x 1.48 x 1.02) in
  - (112.5 x 37.5 x 26) mm
- **Weight:** 180 g (6.5 oz)
- **Polycarbonate Material:**
- **Jaws:** Red Polycarbonate
- **Case:** Dark Polycarbonate
- **Opening Operations – Life:** > 50,000
- **Output:** Double/reinforced insulated 5 ft (1.5 m) lead with safety 4 mm banana plug.
- **Altitude:** <2000 m

Indoor use only.

SAFETY SPECIFICATIONS

- **Electrical:**
  - Conforms to IEC 1010-2-32. ed. 2 2003
- **Common Mode Voltage:** 300 V CAT IV, 600 V CAT III, Pollution Degree 2
- **Electromagnetic Compatibility:**
  - **EN61326-1 (ed. 97)+A1 (ed. 98):** transmission and immunity in an industrial site.

ORDERING INFORMATION

- AC Current Probe MN01…….. Cat. #2129.17

Accessories:

- Banana plug adapter (to non-recessed plug)…….. Cat. #1017.45

OPERATION

Please make sure that you have already read and fully understand the WARNING.

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 AC current input on your DMM or other current measuring instrument. Select the appropriate current range (400 mAAC range). Clamp the probe around the conductor to be tested. If the reading is less than 400 mA, select the lower range until you obtain the best resolution. Read the value display on the DMM and multiply it by the probe ratio (1000/1). If the Reading = 0.159 A, the current flowing through the probe is 0.159 A x 1000 = 159 AAC.
- For best accuracy, avoid taking measurements in the proximity of other conductors if possible. The other conductors may create noise that will affect the accuracy of the measurement.

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. It is critical for power measurement. Contaminants cause air gaps between the jaws, which increases the phase shift between primary and secondary.

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 warrantied 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.

Documents / Resources

	AEMC INSTRUMENTS MN01 AC Current Probe [pdf] User Manual MN01 AC Current Probe, MN01, AC Current Probe, Current Probe, Probe

References

- AEMC Warranty Registration
- User Manual