AC Current Probe
Model MN379

User Manual

DESCRIPTION

The AEMC® Instruments **AC Current Probe Model MN379** (Catalog #2153.01) 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 120 Arms, a range and resolution capable of displaying 10mV of output per amp of measured current, a voltmeter accuracy of 0.5 % or better to take full advantage of the accuracy of the probe and an input impedance of ≥ 1 MΩ.

WARNING

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

	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 symbol signifies that this is a type A current sensor and that application near and removal from **HAZARDOUS LIVE** conductors is permitted.

DEFINITION OF MEASUREMENT CATEGORIES (CAT)

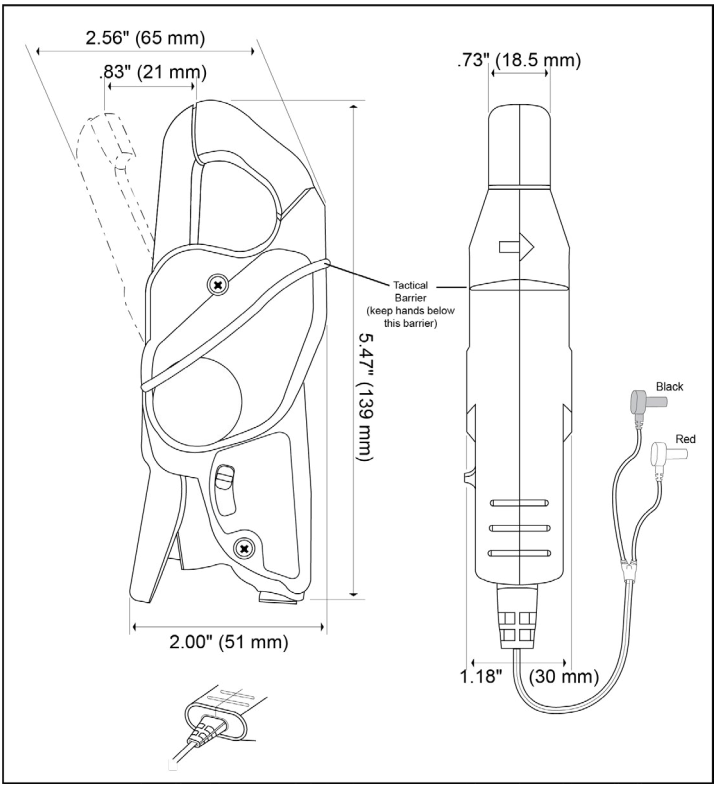
CAT IV: Corresponds to measurements performed at primary electrical supply (< 1000 V).
Example: primary overcurrent protection devices, ripple control units, and meters.

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.



ELECTRICAL SPECIFICATIONS

Nominal Range: 5 A, 100 A

Measurement Range: 5 A: (0.005 to 6) A
100 A: (0.1 to 120) A

Transformer Ratio: Voltage Output

Output Signal: 5 A: 200 mV/A
100 A: 10 mV/A

Accuracy and Phase Shift*:

5 A Range - Accuracy

Ip	0.005 A	0.05 A	0.5 A	5 A
Vs %	1.5 % +0.02 mV	1.5 %	1 %	1 %
Phase	6.5 °	5 °	4.5 °	4 °

100 A Range - Accuracy

Ip	0.01 A	1 A	10 A	100 A
Vs %	1 % +0.02 mV	1 %	1 %	1 %
Phase	3.2 °	2.2 °	2.2 °	2.2 °

*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 MΩ.

Frequency Range: (40 to 10) kHz

Limit Operating Conditions:
200 A MAX to 1 kHz; Derating above 1 kHz: 200 A x (1 *F), F in kHz

Working Voltage: 600 V_{RMS}

Influence of Adjacent Conductor:
<15 mA at 50 Hz

Influence of DC on AC signal:
5 A Range: DC Current < 1 A, < 3 %
100 A Range: DC Current < 10 A, < 10 %

Influence of Conductor Position in Jaw:
0.5 % of mV output @ 50/60 Hz

Influence of Frequency:

5 A Range:

40 Hz to 1 kHz: <0.7 % of mV output

(1 to 3) kHz: <2 % of mV output

150 A Range:

40 Hz to 1 kHz: <0.7 % of mV output

(1 to 3) kHz: <0.7 % 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:

≤ 0.2 % of mV output per 10 °K @ (18 to 28) °C

MECHANICAL SPECIFICATIONS

Operating Temperature:

(14 to 131) °F (-10 to +55) °C)

Storage Temperature:

(-40 to 158) °F (-40 to +70) °C

Operating Relative Humidity:

(10 to 35) °C 85 % RH
(without roll-off above 35 °C)

Maximum Cable Diameter:

One Ø 0.78 in (20 mm), bus bar (20 x 5) 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

Test per IEC 68-2-27

Vibration: Test per IEC 68-2-6

Dimensions:

(5.47 x 2.00 x 1.18) in (139 x 51 x 30) mm

Weight: 180 g (6.5 oz)

Polycarbonate Material:

Jaws: Polycarbonate with 10 % fiberglass charge, Red UL 94 V0

Case: Polycarbonate 920 A Gray

Opening Operations - Life: >50,000

Output:

Double/reinforced insulated 5 ft (1.5 m) lead with safety 4 mm banana plug

SAFETY SPECIFICATIONS

Electrical:

Double insulation or reinforced insulation between the primary or secondary and the outer case of the handle conforms to IEC 1010-2-32.

Common Mode Voltage:

600 V CAT III, Pollution Degree 2

Electromagnetic Compatibility:

Emissivity: EN61326-1 Class B

Electrostatic discharge IEC 1000-4-2

Radiated field IEC 1000-4-3

Fast transients IEC 1000-4-4

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

ORDERING INFORMATION

AC Current Probe MN379 .....Cat #2153.01

Accessories:

Banana plug adapter

(to non-recessed plug)..... **Cat #1017.45**

Adapter - Banana (Female) - (BNC)

(Male) (XM-BB)..... **Cat #2118.46**

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 Models MN379

- Connect the black lead of the current probe to **common** and the red lead to the AC voltage input on your DMM or other voltage-measuring instrument. The AC current probe has an output of 200 mV/A and 10 mV/A. This means that with the probe in the 10 mV/A position, for 100 AAC in a conductor around which the probe is clamped, 1 VAC 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 probe in the 10 mV/A position and if the current is <5 amps the probe can be switched to the 200 mV/A position for the higher resolution. Clamp the probe around the conductor. With the probe in the 10 mV/A position take the reading on the meter and multiply it by 100 to obtain the measured current (e.g, 160 mV reading = 160 x 100 = 16,000 mA or 16 A).

- The 5 A range is design to measure on 5 A current transformer. The output is 1 VRMS for 5 A measured. Enter a scale factor in the meter if possible for direct reading.
- 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 replacement parts.
- To avoid electrical shock, do not attempt to perform any service on the device 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 then gently clean with a soft oiled cloth.

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.

Ship To: 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: You must obtain a CSA# before returning any instrument.

TECHNICAL ASSISTANCE

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

Contact: Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
Phone: (800) 945-2362 (Ext. 351) or (603) 749-6434 (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 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.

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.