

# AC Current Probe Model MD314

## User Manual

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### DESCRIPTION

The MD314 (Catalog #2110.75) is designed for use in industrial environments. The hook-shaped jaws enable the user to “pry” into or “hook” onto cables (will accept 2 x 500 MCM) or even smaller bus bars. The current output up to 500Arms. continuous makes it the perfect tool for measurement with DMMs, recorders or instruments with current ranges. The Model MD314 offers a 5ft. lead with safety 4mm banana plug.

#### 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: 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.

### RECEIVING YOUR SHIPMENT

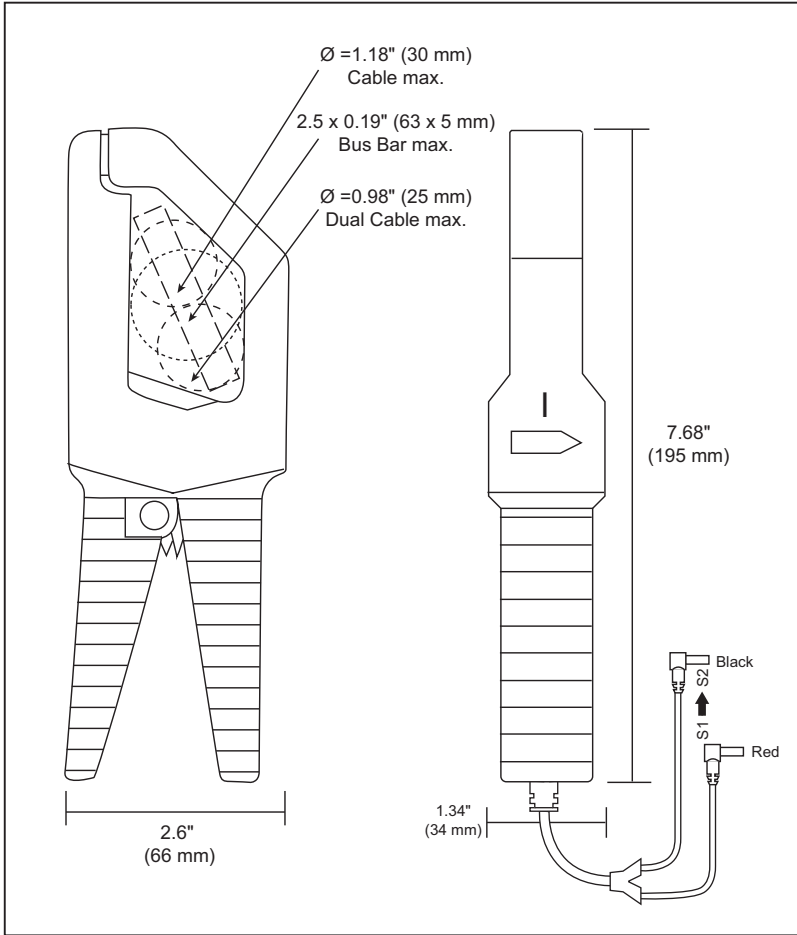
Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

### PACKAGING

The AC Current Probe MD314 is shipped with this instruction manual and a product warranty and registration card. **(You can now register online at [www.aemc.com](http://www.aemc.com))**

### INSTRUMENT COMPATIBILITY

The Model MD314 is compatible with any voltmeter, multimeter, or other voltage measuring instruments with an input impedance lower than 1MΩ. To achieve the stated accuracy, use the MD314 with a voltmeter having an accuracy of 0.75% or better.



**ELECTRICAL SPECIFICATIONS**

**Current Range:**

4 to 500AAC

**Transformation Ratio:** 1000:1

**Output Signal:**

1mVAC/AAC (500mV at 500AAC)

**Accuracy\*:**

Primary current	25A	100 A	250 A	500 A
Accuracy %	4.5%	3.5%	3%	3%
Phase shift	4°	2°	2°	2°

\*Reference conditions: 23°C ± 3°K, 20 to 75% RH, 45 to 65Hz, external magnetic field <40 A/m, no DC component, no external current carrying conductor, test sample centered. 1MΩ load.

**Phase Shift:**

< 7° from 45 to 1000Hz

**Overload**

700A for 10mn

**Frequency Range:**

48 to 1000

**Working Voltage:** 600Vrms

**Common Mode Voltage:**

600Vrms

**Influence of Adjacent Parallel Conductor:**

< 30mA/A at 50Hz

**Influence of Conductor in Jaw Opening:**

± 1.5% ± 0.1A

**MECHANICAL SPECIFICATIONS**

**Operating Temperature:**

-5° to 122°F (-15° to 50°C)

**Storage Temperature:**

-40° to 185°F (-40° to 85°C)

**Influence of Temperature:**

< 0.1% per 10°K

**Jaw Opening:**

1.3" (33mm)

**Maximum Conductor Size:**

1.18" (30mm)

**Maximum Bus Bar Size:**

2.48 x 0.20" (63 x 5mm)

**Envelope Protection:**

IP 20 (IEC 529)

**Drop Test:**

1.5m (IEC 68-2-32)

**Mechanical Shock:**

100g (IEC 68-2-27)

**Vibration:**

10/55/10Hz, 0.15mm (IEC 68-2-6)

**Polycarbonate Material:**

Handles: 10% fiberglass charged polycarbonate UL 94 V0

**Dimensions:**

2.6 x 7.68 x 1.34" (66 x 195 x 34mm)

**Weight:**

14.82 oz (420g)

**Colors:**

Dark gray handles

**Output:**

Double insulated 5ft (1.5m) lead with safety banana plugs

**SAFETY SPECIFICATIONS**



**Electrical:**

Double insulation or reinforced insulation between the primary or secondary and the outer case of the handle upon IEC 1010-2-032.

600V Category III, Pollution Degree 2

**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

**ORDERING INFORMATION**

Current Probe MD314 ..... Cat. #2110.75

**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 section on page 1.

### Making Measurements with the AC Current Probe Model MD303

- Connect the black and red terminals to the 2V range of your DMM or current measuring instrument. Select the appropriate current range (2V AC range). Clamp the probe around the conductor to be tested with the arrow pointed toward the load. If the reading is less than 200mV, 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 reading = 59mV, the current flowing through the probe is  $59 \times 1000 = 59000\text{mA}$  or 59A).
- 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 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.

## 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 use or application of this instrument, please call our technical hotline:

(800) 343-1391 • (508) 698-2115 • Fax (508) 698-2118  
Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments  
techsupport@aemc.com  
www.aemc.com