

# AC Current Probe Model JM850A

## User Manual

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### DESCRIPTION

The JM850A (Catalog # 2110.87) is designed for use in industrial environments. The “squared” jaws permit multiple conductor or bus bar positioning. The current output makes it the perfect tool for measurement with DMMs, recorders, power and harmonic meters. Three ranges allow you to obtain the best resolution even on low current measurement.

### 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 600 V 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 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.

### RECEIVING YOUR SHIPMENT

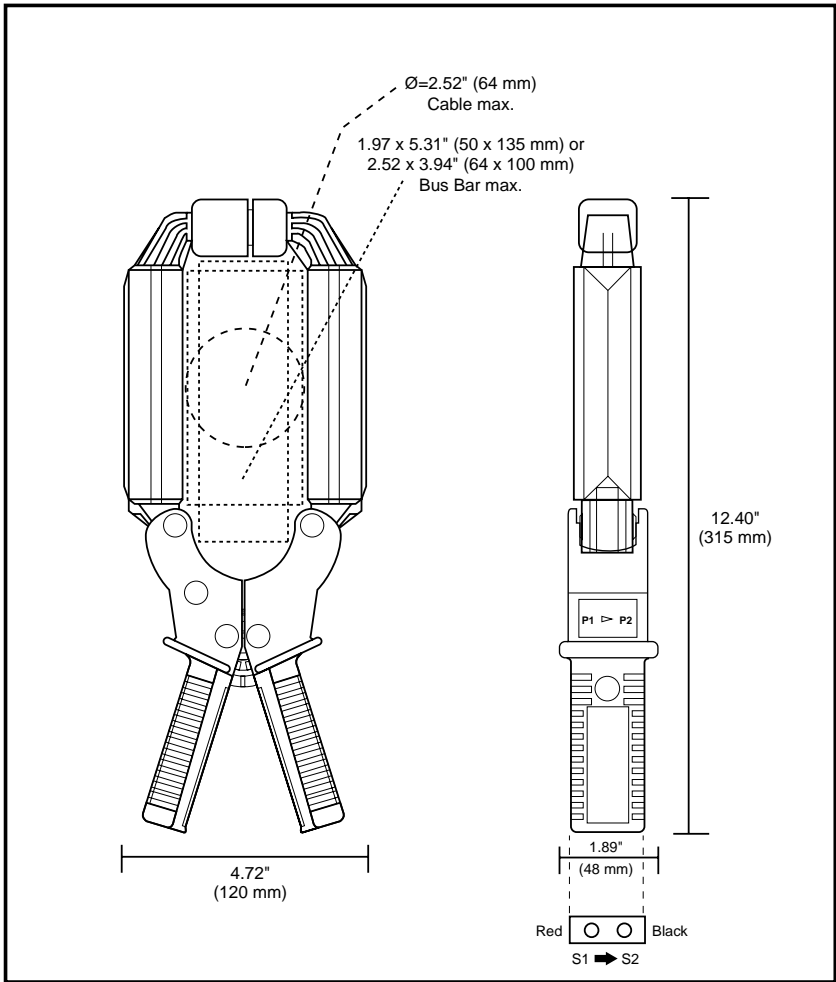
Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

### PACKAGING

The shipping container includes the probe, this instruction manual and a product registration card. You can now register online at [www.aemc.com](http://www.aemc.com).

### INSTRUMENT COMPATIBILITY

The Model JM850A is compatible with any AC Ammeter, multimeter, or other current measuring instrument with an input impedance lower than  $2.5\Omega$ . To achieve the stated accuracy, use the JM850A with an Ammeter having an accuracy of 0.75% or better.



## **ELECTRICAL SPECIFICATIONS**

### **Current Range:**

1 to 1000A AC continuous cycle  
 1 to 2000A AC continuous cycle  
 1 to 2400A AC continuous cycle for the  
 full temperature range  
 (3000A if temperature is < 35°C or 95°F)

### **Transformation Ratio:**

1000:1, 2000:1, 3000:1

### **Output Signal:**

1 mA AC/A AC (1A at 1000A)  
 0.5 mA AC/A AC (1A at 2000A)  
 0.333 mA AC/A AC (1A at 3000A)

### **Accuracy and Phase Shift\*:**

#### **1000A RANGE**

Primary current	50A	200A	1000A
Accuracy %	3%	1.5%	1%
Phase shift	3°	1.5°	1°

**Load Impedance:** 2.5Ω

**Overload:** 1400A for 10 mn

**Ampere Second Product:** 25 A.s

**Accuracy:** Per IEC 185-26-27  
 Class 1 (2.5 VA) from 48 to 1000 Hz

## 2000A RANGE

Primary current	100A	400A	2000A
Accuracy %	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

**Load Impedance:** 5Ω

**Overload:** 2400A for 10 mn

**Ampere Second Product:** 60 A.s

**Accuracy:** Per IEC 185-26-27  
Class 0.5 (5 VA) from 48 to 1000 Hz

## 3000A RANGE

Primary current	150A	600A	3000A
Accuracy %	1.5%	0.75%	0.5%
Phase shift	1.5°	0.75°	0.5°

**Load Impedance:** 10Ω

**Overload:** 3400A for 10 mn

**Ampere Second Product:** 90 A.s

**Accuracy:** Per IEC 185-26-27  
Class 0.5 (10 VA) from 48 to 1000 Hz

(\*Reference conditions: 23°C±3°K, 20 to 85% RH, 45 to 65 Hz, external magnetic field < 40 A/m, no DC component, no external current carrying conductor, test sample centered.)

**Frequency Range:** 30 to 1000Hz; current derating above 1000Hz for continuous use

**Load Impedance:** ≤ 10Ω

**Working Voltage:** 600V AC

**Common Mode Voltage:** 600V AC

**Open Secondary Voltage:**  
42V max. by limiting circuit

**Influence of Adjacent Conductor:**  
0.005A/A AC

**Influence of Conductor in Jaw Opening:**  
1.5% ± 0.2A on 1000:1 range  
1% ± 0.2A on 2000:1 range  
1% ± 0.2A on 3000:1 range

## MECHANICAL SPECIFICATIONS

**Operating Temp.:** 14° to 122°F (-10° to 50°C)

**Storage Temp.:** -13° to 176°F (-25° to 80°C)

**Influence of Temperature:** < 0.1% per 10°K

**Jaw Opening:** 3.54" (90 mm)

## **Maximum Conductor Size:**

Cable: 2.52" Ø max. (64mm)  
Bus bar: 1.97 x 5.31" (50 x 135 mm)  
2.52 x 3.94" (64 x 100 mm)

**Envelope Protection:** IP 20 (IEC 529)

**Drop Test:** 1 m (IEC 68-2-32)

**Mechanical Shock:** 100 g (IEC 68-2-27)

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

## **Polycarbonate Material:**

Handles: 10% fiberglass charged polycarbonate UL 94 V0

Jaws: ABS UL 94 V2

## **Dimensions:**

4.72 x 12.40 x 1.9" (120 x 315 x 48 mm)

**Weight:** 2.65 lbs. (1200 g)

**Colors:** Dark gray handles with red jaws

## **Output:**

Two standard safety banana jacks (4mm)

## SAFETY SPECIFICATIONS



### **Electrical:**

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

### **Common Mode Voltage:**

- 600 V Category III, Pollution: 2.  
- 300 V Category IV, Pollution: 2.

### **Electromagnetic Compatibility:**

#### **(CE Mark)**

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 JM850A ..... Cat #2110.87**

### **Accessories:**

Leads, set of 2, 5 ft. safety (1000V) .Cat #2111.29

Lead No. 211 for Probe 5A Series  
(5 ft. rated 250V)..... **Cat #2950.06**

Pair, safety current leads  
(5 ft. retractable, rated 250V)..... **Cat #100.319**

## 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 JM850A

- Connect the black and red terminals to the Ampere AC range of your DMM or current measuring instrument. Select the appropriate current range. If the current magnitude is unknown, select the highest range (3000A AC / 1A AC) on the switch probe located inside the handle. Clamp the probe around the conductor to be tested, with the arrow pointed toward the load. If the reading is less than 200 mA or 20 mA, select the lower range until you obtain the best resolution. Read the value display on the DMM and multiply it by the range selected. (If reading = 0.259A on the 1000/1 range, the current flowing through the probe is  $0.259A \times 1000 = 259 A AC$ ).
- For best accuracy: carefully center the conductor inside the probe jaw, 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.

## Maintenance

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. The following is the recommended procedure for cleaning the probe jaws: Use a very fine sand paper (fine 600) to avoid scratching the jaw, then gently clean with a soft, oil 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).

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15 Faraday Drive • Dover, NH 03820 USA  
Tel: (800) 945-2362 (Ext. 360) or (603) 749-6434 (Ext. 360)  
Fax: (603) 742-2346 or (603) 749-6309  
[repair@aemc.com](mailto: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

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[techsupport@aemc.com](mailto:techsupport@aemc.com)

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