

# AC Current Probe

## Models SR701 and SR704

### User Manual

#### DESCRIPTION

The **SR701/SR704 AC Current Probes** (Catalog #2116.29 and #2116.30) are designed for use in industrial environments. The ergonomic design allows them to easily attach to cables or small bus bars. The **circular** jaws guarantee a very good accuracy and low phase shift. The probes have a measurement range up to 1000 ARMS and are compatible with any AC ammeter, multimeter, or other current measurement instrument with an input impedance lower than 5  $\Omega$ . To achieve the stated accuracy, use the SR701/SR704 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: 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 Degree 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 IV:** For measurements performed at the primary electrical supply (< 1000 V), such as on primary overcurrent protection devices, ripple control units, or meters.

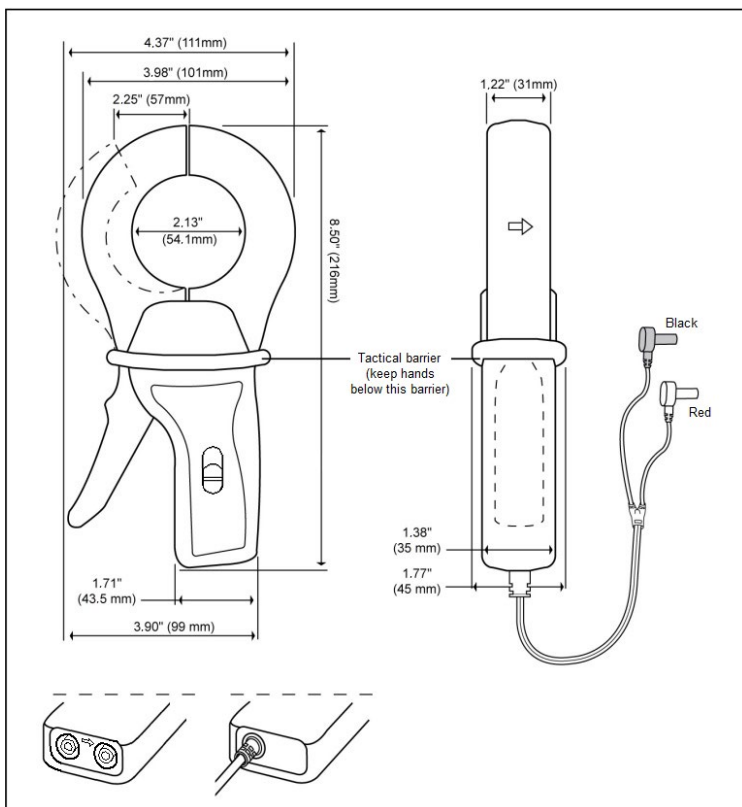
**CAT III:** For measurements performed in the building installation at the distribution level, such as hardwired equipment in fixed installation or circuit breakers.

**CAT II:** For measurements performed on circuits directly connected to the electrical distribution system, such as measurements on household appliances or 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 - SR701/SR704 DRAWING**



### **ELECTRICAL SPECIFICATIONS**

**Current Range:** 1 mA to 1200 AAC

**Transformation Ratio:** 1000:1

**Output Signal:** 1 mAAC/AAC  
(1 AAC at 1000 A)

**Accuracy and Phase Shift\*:**

**Accuracy:**

(1 to 100) mA:  $\pm 3\%$  Reading  $\pm 5$  mA

(0.1 to 1) A:  $\pm 2\%$  Reading  $\pm 3$  mA

(1 to 10) A:  $\pm 1\%$  Reading

(10 to 100) A:  $\pm 0.5\%$  Reading

(100 to 1200) A:  $\pm 0.3\%$  Reading

**Phase Shift:**

(1 to 100) mA: Not Specified

(0.1 to 1) A: Not Specified

(1 to 10) A:  $\leq 2^\circ$

(10 to 100) A:  $\leq 1^\circ$

(100 to 1200):  $\leq 0.7^\circ$

\*Referenced conditions:  $23^\circ\text{C} \pm 3^\circ\text{K}$ ,  
(20 to 75) % RH, (48 to 65) Hz, external  
magnetic field  $< 40\text{ A/m}$ , no DC component,  
no external current carrying conductor, test  
sample centered. Load Impedance:  $\leq 1\ \Omega$

**Overload:** 15 minutes ON, 30 minutes OFF

**Accuracy:** Per IEC 185

**Frequency Range:** 30 Hz to 5 kHz; current  
derating above 1 kHz using the formula:

$$1000\text{ A} \times \frac{1}{F\text{ (kHz)}}$$

**Load Impedance:**  $5\ \Omega$  max

**Working Voltage:** 600 V CAT III

**Common Mode Voltage:** 600 V CAT III

**Open Secondary Voltage:**

$< 25\text{ V}$  by limiting circuit

**Influence of Adjacent Conductor:**

$< 1\text{ mA/AAC}$

**Influence of Conductor in Jaw Opening:**

0.1 % of Reading

**Influence of Frequency:**

From (30 to 48) Hz: < 0.5 % of R

From (65 to 1000) Hz: < 1 % of R

From (1 to 5) kHz: < 2 % of R

**MECHANICAL SPECIFICATIONS****Operating Temperature:**

(14 to 122) °F (-10 to 50) °C

**Storage Temperature:**

(-4 to 158) °F (-20 to 70) °C

**Influence of Temperature:**

< 0.15 % per 10 °K

**Influence of Humidity:**

From (10 to 90) % RH: 0.1 %

**Jaw Opening:**

2.25 in (57 mm) max

**Maximum Conductor Size:**

2.05 in (52 mm)

**Envelope Protection:** IP 40 (IEC 529)**Drop Test:** 1 m (IEC 68-2-32)**Mechanical Shock:** 100 g (IEC 68-2-27)**Vibration:**

(5 to 15) Hz, 0.15 mm (IEC 68-2-6)

(15 to 25) Hz, 1 mm

(25 to 55) Hz, 0.25 mm

**Material:**

Handles and jaws: Polycarbonate UL94V0

**Dimensions:**

(4.37 x 8.50 x 1.77) in (111 x 216 x 45) mm

**Weight:**

1.21 lbs (550 g)

**Output:**

SR701: (2) standard safety banana jacks (4 mm)

SR704: 5 ft (1.5 m) lead with safety banana plug (4 mm)

**SAFETY SPECIFICATIONS****Electrical:**

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

**Common Mode Voltage:**

600 V CAT III, Pollution Degree 2

**Electromagnetic Compatibility:**

Emission and immunity in an industrial environment according to EN61326-1

**ORDERING INFORMATION**

**AC Current Probe SR701 .....Cat. #2116.29**

**AC Current Probe SR704 .....Cat. #2116.30**

**Accessories:**

Lead, set of 2, 5 ft Safety Leads

(1000 V CAT IV) .....Cat. #2152.24

Adapter BNC (Male) - Banana (Female)

(XM-BB) (600 V CAT III) .....Cat. #2118.46

Banana plug adapter

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

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**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 SR701/SR740**

- 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 (2 AAC range). Clamp the probe around the conductor to be tested with the arrow pointed toward the load. If the reading is less than 200 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 reading = 0.659 A, the current flowing through the probe is 0.659 A x 1000 = 659 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, please 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, and 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](mailto:repair@aemc.com)

*(Or contact your authorized distributor)*



**NOTE:** You must obtain a CSA# before returning any instrument.

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## TECHNICAL AND SALES 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](mailto: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](http://www.aemc.com/warranty.html).

**Please print the online Warranty Coverage Information for your records.**