

**AEMC**  
INSTRUMENTS  
CHAUVIN ARNOUX GROUP  
**SR601, SR604 AC  
Current Probe**



# AEMC INSTRUMENTS SR601, SR604 AC Current Probe User Manual

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**AEMC INSTRUMENTS SR601, SR604 AC Current Probe**



## Product Information

### Description

The AC Current Probe Models SR601 and SR604 are precision current probes designed for accurate measurement of AC currents in various electrical applications. These probes come with safety features to protect personnel and ensure proper operation of the instrument.

### International Electrical Symbols

These probes are protected by double or reinforced insulation, ensuring safe usage in different electrical environments.

### Electrical Specifications

- **Current Range:** (0.1 to 1000) AAC, continuous cycle @ 1 kHz
- **Transformation Ratio:** 1000:1
- **Output Signal:** 1 mAAC/AAC (1 AAC at 1000 A)
- **Accuracy and Phase Shift\*:**
  - **Primary Current (0.1 to 10 A):** 3% + 0.1 A accuracy
  - **Primary Current (10 to 50 A):** 3% accuracy, 1.5% phase shift

### Product Usage Instructions

#### • Safety Warnings

Ensure to read the instruction manual completely before use. Always use caution when working with potentially high voltages and currents. Do not use the probe if damaged. Connect the current probe to the measuring device before placing it around the conductor. Avoid using the probe on non-insulated conductors with a

potential to ground greater than 600 V CAT III.

- **Inspecting the Probe**

Before each use, inspect the probe for any cracks in the housing or output cable insulation. Do not use the clamp in wet environments or where hazardous gases are present. Do not exceed the tactile barrier limits when using the probe.

- **Receiving Your Shipment**

Upon receiving your shipment, ensure all contents are consistent with the packing list. Notify your distributor of any missing items immediately. If the equipment appears damaged, file a claim with the carrier and inform your distributor with a detailed description of the damage.

## Frequently Asked Questions

What is the primary current range of the AC Current Probes SR601 and SR604?

The primary current range of these probes is from 0.1 to 1000 AAC.

What is the transformation ratio of the probes?

The transformation ratio of the probes is 1000:1, providing accurate current measurement.

What safety precautions should be considered when using these probes?

Users should always inspect the probe for damage before each use, avoid using it on non-insulated conductors with high potentials, and follow all safety guidelines mentioned in the user manual.

## DESCRIPTION

The AEMC® Instruments Models SR601 and SR604 (Cat. #2113.43/2113.44) 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 of up to 1000 ARMS continuous 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 SR601/SR604 with an ammeter having an accuracy of 0.75 % or better.

### WARNING:




Safety warnings are provided to ensure the safety of personnel and the 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 to the conductor
- Do not use on non-insulated conductors 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 clamps in wet environments or in locations where hazardous gases exist.
- Do not use the probe anywhere beyond the tactile barrier.

## INTERNATIONAL ELECTRICAL SYMBOLS

	Signifies that the instrument is protected by double or reinforced insulation.
	<b>CAUTION – Risk of Danger!</b> Indicates a <b>WARNING</b> . 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 sensor as per IEC 61010-2-032.

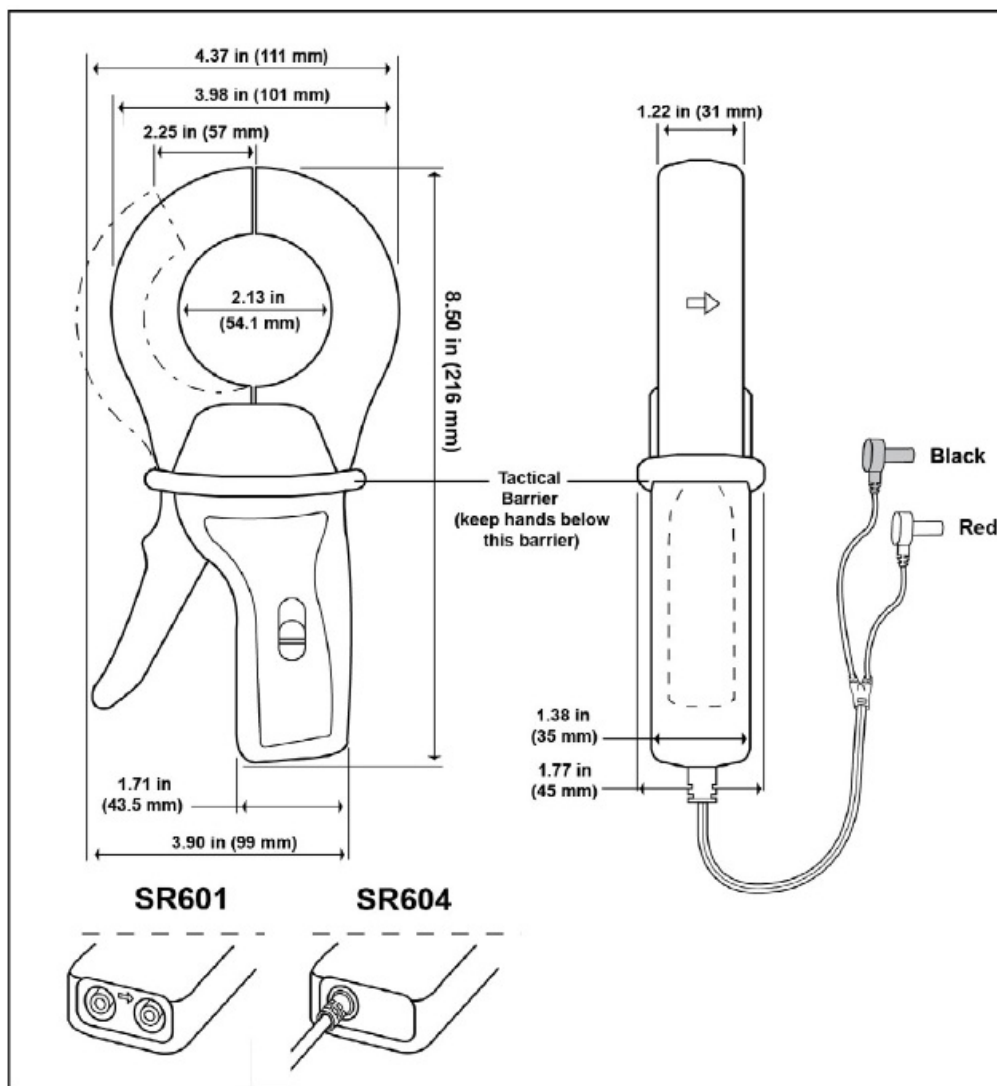
## DEFINITION OF MEASUREMENT CATEGORIES (CAT)

- **CAT IV:** Corresponds to measurements performed at the primary electrical supply (< 1000 V). Examples: 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.

## SR601-SR604 DRAWING



## SPECIFICATIONS

### ELECTRICAL SPECIFICATIONS

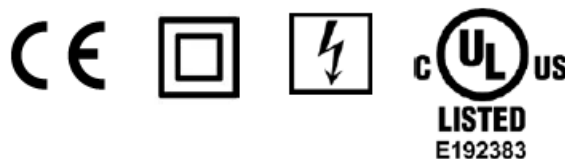
- **Current Range:** (0.1 to 1000) AAC, continuous cycle @  $\leq 1$  kHz
- **Transformation Ratio:** 1000:1
- **Output Signal:** 1 mAAC/AAC (1 AAC at 1000 A)
- **Accuracy and Phase Shift\*:**
  - \*Reference conditions: 23 °C $\pm$ 3 °K, (20 to 75) % RH, (48 to 65) Hz, external magnetic field <40 A/m, no DC component, no external current carrying conductor, test sample centered.) Load impedance 5  $\Omega$ .
- **Overload:** 1200 A for 15 min ON, 30 min OFF
- **Accuracy:** Per IEC 185
- **Frequency Range:** 30 Hz to 5 kHz; current derating above 1 kHz using the formula: 1000 A x 1/F (in kHz)
- **Load impedance:** 5  $\Omega$  max
- **Working Voltage:** 600 V CAT III
- **Open Secondary Voltage:** <25 V by limiting the circuit
- **Influence of Adjacent Conductor:** < 1 mA/AAC
- **Influence of Conductor in Jaw Opening:** 0.1 % of Reading
- **Influence of Frequency:**
  - From (30 to 48) Hz: <1 % of Reading

- From (65 to 1000) Hz: <0.5 % of Reading
- From (1 to 5) kHz: <1 % of Reading

## 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:** < 0.1 % per 10 °K
- **Influence of Humidity:** From (10 to 90) %: 0.1 %
- **Jaw Opening:** 2.25 in (57 mm)
- **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
- **Polycarbonate Material:**
  - **Handles:** ABS Grey and Lexan 500R,
  - **Red:** UL94V0
  - **Jaws:** Lexan 500R, Red: UL94V0
- **Dimensions:** (4.37 x 8.50 x 1.77) in (111 x 216 x 45) mm
- **Weight:** 1.21 lbs (550 g)
- **Output:**
  - **SR601:** Two standard safety banana jacks (4 mm)
  - **SR604:** 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 1010-2-032
- **Common Mode Voltage:** 600 V CAT III, Pollution Degree 2
- **Dielectric Strength:** 5550 V, 50/60 Hz between primary, secondary, and the outer case handle.
- **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

- AC Current Probe SR601..... Cat. #2113.43
- AC Current Probe SR604..... Cat. #2113.44

### Accessories:

- Lead, set of two, 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

## OPERATION

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

### Making Measurements with the AC Current Probe Models SR601/SR604

- Connect the black lead of the current probe to the common and the red lead to the AC 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 displayed on the DMM and multiply it by the probe ratio (1000/1). (If reading = 0.659 A, the current flowing through the probe is  $0.659 \text{ A} \times 1000 = 659 \text{ AAC}$ )
- 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, 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 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 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 errors in readings. To clean the probe jaws, use very fine sandpaper (fine 600) to avoid scratching the jaw, 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](mailto: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
- [800-945-2362](tel:800-945-2362) (Ext. 360) or [603-749-6434](tel:603-749-6434) (Ext. 360)
- [repair@aemc.com](mailto:repair@aemc.com).

### **(Or contact your authorized distributor.)**

Contact us for the costs for repair, standard calibration, and calibration traceable to N.I.S.T.

### **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 our technical hotline:

- [800-343-1391](tel:800-343-1391) (Ext. 351)
- [techsupport@aemc.com](mailto:techsupport@aemc.com)

## **LIMITED WARRANTY**

The instrument is warrantied to the owner for 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, or abused, or if the defect is related to service not performed by AEMC® Instruments.

- Full warranty coverage and product registration are 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.

## **Documents / Resources**



[AEMC INSTRUMENTS SR601, SR604 AC Current Probe](#) [pdf] User Manual  
SR601, SR604, SR601 SR604 AC Current Probe, SR601 SR604, AC Current Probe, Current Probe, Probe

## References

- [!\[\]\(efb87da6d8ca3116acedf2a9895074d9\_img.jpg\) AEMC Warranty Registration](#)
- [User Manual](#)

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