AC Current Probe
Models SR601 and SR604

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 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 Ω. To achieve the stated accuracy, use the SR601/SR604 with an ammeter having an accuracy of 0.75 % or better.

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

	Signifies that the instrument is protected by double or reinforced insulation.
	**CAUTION - Risk of Danger!** Indicates a **WARNING**. 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).
Example: primary overcurrent protection devices, ripple control units, and meters.

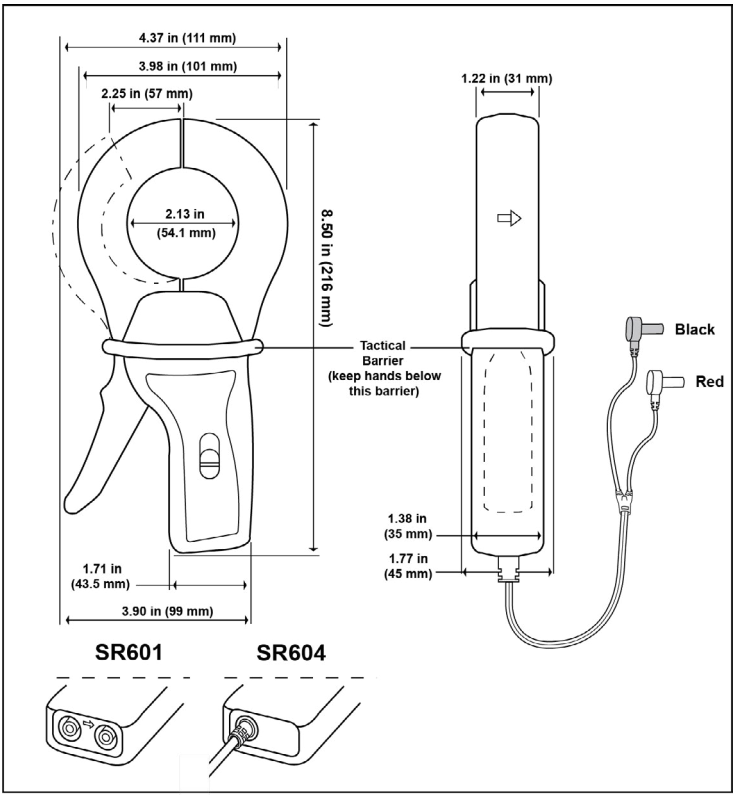
CAT III: Corresponds to measurements performed in the building installation at the distribution level.
Example: hardwired equipment in fixed installation and circuit breakers.

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.

SR601-SR604 DRAWING



ELECTRICAL SPECIFICATIONS

Current Range:
(0.1 to 1000) A_{AC}, continuous cycle @ ≤ 1 kHz

Transformation Ratio: 1000:1

Output Signal:
1 mA_{AC}/A_{AC} (1 A_{AC} at 1000 A)

Accuracy and Phase Shift*:

Primary Current	(0.1 to 10 A)	10 A	50 A
Accuracy %	≤ 3 % + 0.1 A	3 %	1.5 %
Phase Shift	N/A	3 °	1.5 °

Primary Current	200 A	1000 A	1200 A
Accuracy %	.75 %	0.5 %	0.5 %
Phase Shift	0.75 °	0.5 °	0.5 °

**Reference conditions: 23 °C±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 Ω.*

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:

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

Load impedance: 5 Ω max

Working Voltage: 600 V CAT III

Open Secondary Voltage:
<25 V by limiting circuit

Influence of Adjacent Conductor:
< 1 mA/A_{AC}

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 ºK

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

LISTED
E192383

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 plugl)..... **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 Models SR601/SR604

- 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, 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 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

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 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 (Ext. 360) or (603) 749-6434 (Ext. 360) ▪ 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 (Ext. 351) ▪ techsupport@aemc.com

LIMITED WARRANTY

The instrument 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.