

# AC Current Probe

## Model SR759

### User Manual

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#### DESCRIPTION

The SR759 (Catalog #2116.33) is designed for use in industrial environments. The ergonomic design allows it to easily attach to cables or small bus bars. The "circular" jaws guarantee a very good accuracy and low phase shift. The probe has four measurement ranges with the highest range measuring to 1000Arms continuous and is compatible with any AC Voltmeter, multimeter, or other voltage measurement instrument that has the following features: Range and resolution capable of displaying 1mV of output per amp of measured current; Voltmeter accuracy of 0.75% or better to take full advantage of the accuracy of the probe; Input impedance of  $\geq 1M\Omega$ .

#### 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.



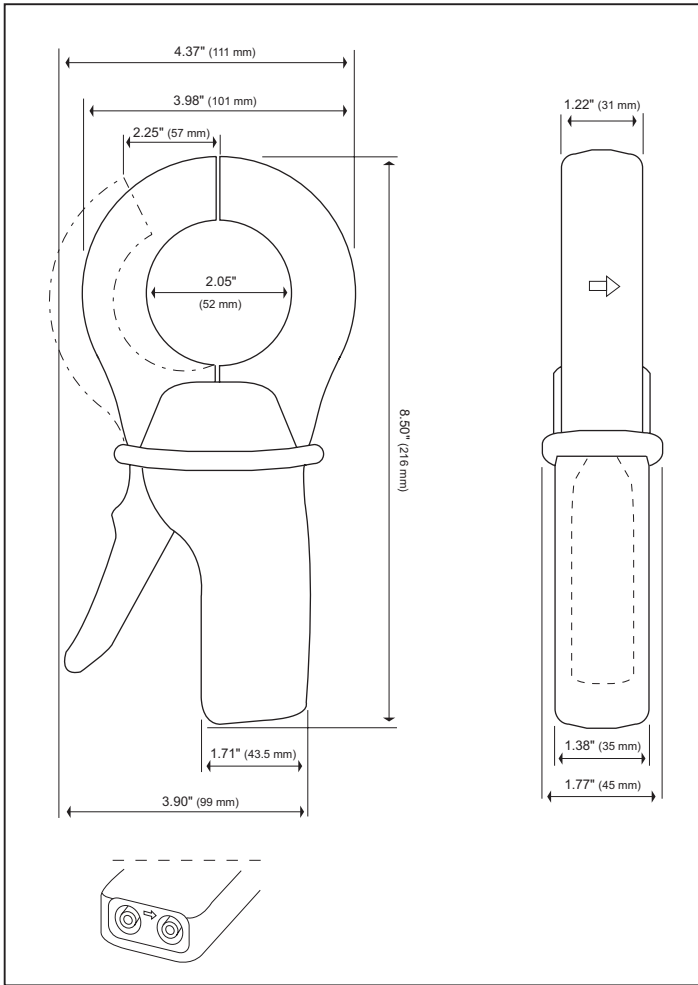
This is a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted.

#### DEFINITION OF MEASUREMENT CATEGORIES

- Cat. I:** For measurements on circuits not directly connected to the AC supply wall outlet such as protected secondaries, signal level, and limited energy circuits.
- Cat. II:** For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.
- Cat. III:** For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.
- Cat. IV:** For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

#### 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.



## **ELECTRICAL SPECIFICATIONS**

### **Current Range:**

0.1 to 1000AAC, continuous cycle  
with frequency  $\leq 500\text{Hz}$

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

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

#### **1A Range**

Primary Current	Accuracy %	Phase Shift
0.001 to 0.01A	3% + 1mV	Not Specified
0.01 to 0.1A	$\leq 3\% + 1\text{mV}$	Not Specified
0.1 to 1A	$\leq 0.7\% + 1\text{mV}$	$\leq 10^\circ$
1 to 1.2A	$\leq 0.7\% + 1\text{mV}$	$\leq 10^\circ$

#### **10A Range**

Primary Current	Accuracy %	Phase Shift
0.01 to 0.1A	1% + 0.2mV	Not Specified
0.1 to 1A	$\leq 0.5\% + 0.2\text{mV}$	$\leq 5^\circ$
1 to 10A	$\leq 0.5\%$	$\leq 2^\circ$
10 to 12A	$\leq 0.5\%$	$\leq 2^\circ$

#### **100A Range**

Primary Current	Accuracy %	Phase Shift
0.1 to 1A	1% + 0.2mV	Not Specified
1 to 10A	$\leq 0.5\% + 0.2\text{mV}$	$\leq 2^\circ$
10 to 100A	$\leq 0.3\%$	$\leq 1^\circ$
100 to 120A	$\leq 0.2\%$	$\leq 1^\circ$

### 1000 A Range

Primary Current	Accuracy %	Phase Shift
1 to 10A	1% + 0.2mV	Not Specified
10 to 100A	≤ 0.5% + 0.2mV	≤ 2°
100 to 1000A	≤ 0.2%	≤ 1°
1000 to 1200A	≤ 0.2%	≤ 1°

\*Reference conditions: 23°C ± 3°K, 20 to 75% RH, 48 to 65Hz, external magnetic field < 40A/m, no DC component, no external current carrying conductor, test sample centered. Load impedance 1MΩ

**Overload:** 1200A for 15 min on, 30 min off

**Accuracy:** Per IEC 185

**Frequency Range:** 30Hz to 3kHz; current derating above 500Hz using the formula:

$$1000 A \frac{x}{2 \times F \text{ (in kHz)}}$$

**Load Impedance:**

100kΩ min

**Working Voltage:** 600V Cat. III

**Common Mode Voltage:** 600V Cat. III

**Influence of Adjacent Conductor:** < 1mA/AAC

**Influence of Conductor in Jaw Opening:**

0.3% of Reading

**Influence of Frequency:**

1mV/A Range: < 1% R from 10Hz to 1kHz

10mV/A Range: < 1.5% R from 10Hz to 3kHz

100mV/A Range: < 2% R from 10Hz to 3kHz

1000mV/A Range: < 2% R from 30Hz to 1kHz

**Open Voltage:** 8V peak max.

## 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%: 0.1%

**Jaw Opening:** 2.25" (57mm) max

**Maximum Conductor Size:**

2.05" (52mm)

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

15 to 25Hz, 1mm

25 to 55Hz, 0.25mm

**Polycarbonate Material:**

Handles: ABS Grey and

Lexan 500R, Red: UL94V0

Jaws: Lexan 500R, Red : UL94V0

**Dimensions:**

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

**Weight:**

1.21 lbs (550g)

**Output:**

SR759: 5 ft (1.5m) lead with safety

4mm 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:**

600V Category III, Pollution Degree 2

**Dielectric Strength:**

5550V, 50/60Hz between primary, secondary and the outer case of the 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 SR759 ..... Cat #2116.33**

*Includes a user manual and a product warranty and registration card*

**Accessories:**

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

Banana plug adapter

(to nonrecessed 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 SR759

- Connect the black and red terminals to the 2VAC range of your DMM or voltage measuring instrument. Select the appropriate current range (1000/1V). Clamp the probe around the conductor to be tested with the arrow pointed toward the load. Read the value display on the DMM and multiply it by the probe ratio selected. (e.g. If reading = 185mV, the current flowing through the probe is  $185 \times 1000 = 185,000\text{mA} = 185\text{A}$  when 1mV/A range is selected.)
- 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

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)  
(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  
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