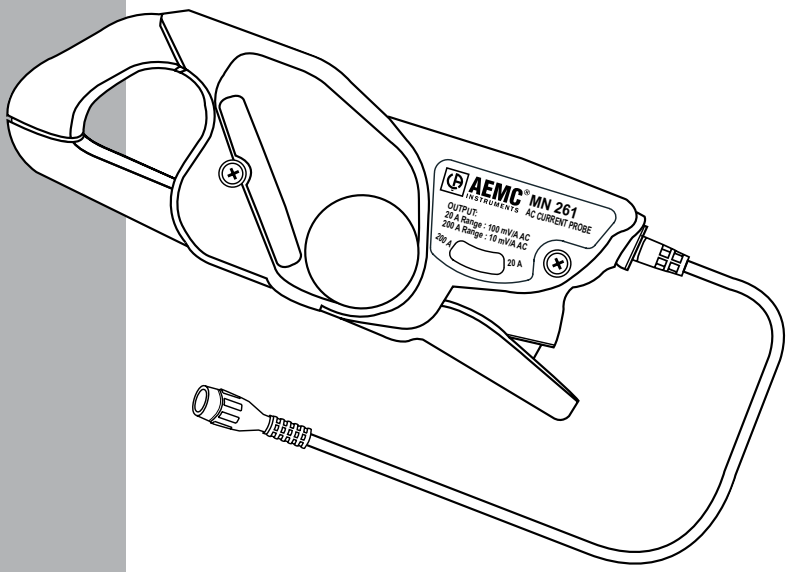
■ AC CURRENT
OSCILLOSCOPE PROBE

MN261



ENGLISH

User Manual

AEMC® INSTRUMENTS

Statement of Compliance

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments certifies that this instrument has been calibrated using standards and instruments traceable to international standards.

We guarantee that at the time of shipping your instrument has met its published specifications.

An NIST traceable certificate may be requested at the time of purchase, or obtained by returning the instrument to our repair and calibration facility, for a nominal charge.

The recommended calibration interval for this instrument is 12 months and begins on the date of receipt by the customer. For recalibration, please use our calibration services. Refer to our repair and calibration section at **www.aemc.com**.

Serial #: _____

Catalog #: 2115.82

Model #: MN261

Please fill in the appropriate date as indicated:

Date Received: _____

Date Calibration Due: _____

AEMC® INSTRUMENTS

Chauvin Arnoux®, Inc.
d.b.a AEMC® Instruments
www.aemc.com

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INTRODUCTION

⚠ WARNING ⚠

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Connect the probe to the oscilloscope or voltage measuring instrument **before** clamping the probe around a conductor.
- Never use the probe on circuits rated higher than 600V, Cat III.
- Never leave the probe clamped around a conductor while not connected to an oscilloscope or voltage measuring instrument.
- Carefully center the conductor inside the probe jaws and ascertain that the probe is perpendicular to the conductor.
- Avoid, if possible, the proximity of other conductors which may create noise.
- Check the magnetic mating surfaces of the probe jaws; these should be free of dirt, rust, or other foreign matter.
- Do not use a probe which is cracked, damaged, or has defective leads.

1.1 International Electrical Symbols

This symbol signifies that the instrument is protected by double or reinforced insulation. Use only specified replacement parts when servicing the instrument.

This symbol on the instrument indicates a WARNING and that the operator must refer to the user manual for instructions before operating the instrument. In this manual, the symbol preceding instructions indicates that if the instructions are not followed, bodily injury, installation/sample and product damage may result.

Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.

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

1.2 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.

1.3 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. Save the damaged packing container to substantiate your claim.

1.4 Ordering Information

AC Current Oscilloscope Probe Model MN261 ..... **Cat. #2115.82**
Includes user manual and a product warranty and registration card.

1.4.1 Accessories and Replacement Parts

Male Banana - Female BNC Adaptor (XF-SS) ..... **Cat. #2111.32**

Order Accessories and Replacement Parts Directly Online
Check our storefront at **www.aemc.com** for availability

PRODUCT FEATURES

2.1 Description

The AC Current Oscilloscope Probe Model MN261 expands oscilloscope applications in industrial or power environments, and is ideal for analysis and measurement of distorted current waveforms and harmonics.

The Model MN261 permits accurate display and measurement of currents from 0.1 to 240Arms, 40Hz to 10kHz (with current derating) without breaking into the circuit. A passive filter eliminates noise, ring on rapid rising (di/dt) waveforms, and ensures accurate screen displays.

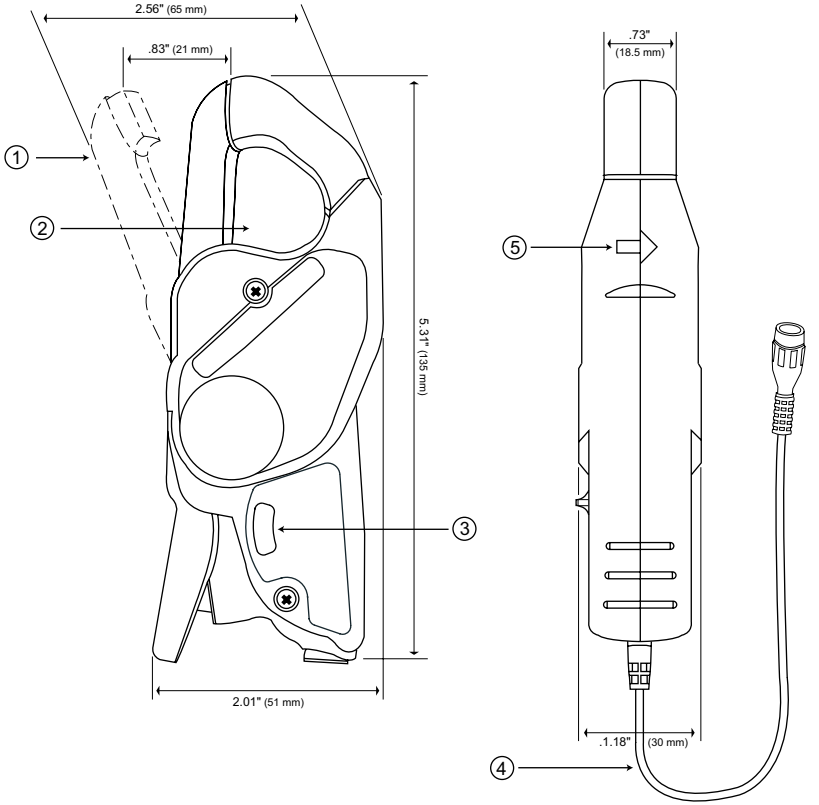
The probe connects directly to an oscilloscope through an insulated coaxial cable with an insulated BNC.

2.2 Compatibility

The Model MN261 is compatible with any analog or digital oscilloscope or other voltage-measuring instrument which has the following features:

- BNC input connector
- Range capable of displaying 0.2 to 0.5V per division, or 2V range
- Minimum input impedance of 1MΩ

2.3 Control Features



1. Jaw Opening: 0.83" (21mm)
2. Maximum dimension of conductor: 0.78" (20mm)
3. Two position switch
4. 6.5 ft (2m) output cable
5. Arrow indicates direction of current flow. Current flows in a positive direction when it travels from supply to load.

SPECIFICATIONS

3.1 Electrical Specifications

*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.

Current Range: 0.1 to 24Arms
0.5 to 240Arms

Output Signal: mV output signal; 2 range switch selectable on handle
100mV/A: 0.1 to 24Arms
10mV/A: 0.5 to 240Arms

Load Impedance: ≥ 1MΩ @ ≤ 100pF

Range: 10mV/A (2V at 200A)

Primary Current	0.5 to 10A	10 to 40A	40 to 100A	100 to 240A
Accuracy	≤3.5% ± 5mV	≤3% ± 5mV	≤2.5% ± 5mV	≤1.5% ± 5mV
Phase Shift	N/A	≤6°	≤4°	≤3°

Overload: 240A for 10mn ON, 30mn OFF

Range: 100mV/A (2V at 20A)

Overload: 120A continuous

Accuracy: 2% ± 50mV

Phase Shift: not specified

Frequency Range (with current derating): 40Hz to 10kHz (@ -3dB)
See Typical Response Curves (§ 3.5)

Load Impedance: 100kΩ min

Working Voltage: 600V Cat. III

Common Mode Voltage: 600V Cat. III

Influence of Adjacent Conductor: <15mA/A$_{AC}$ @ 50Hz

Influence of Conductor Position in Jaw Opening:
0.5% of Reading @ 50/60Hz

Influence of Frequency:

Range 20A: 40Hz to 1kHz: 10% of mV output
1 to 10kHz: 15% of mV output

Range 200A: 40Hz to 1kHz: 3% of mV output
1 to 10kHz: 12% of mV output

3.2 Mechanical Specifications

Dimensions: 5.47 x 2.00 x 1.18" (139 x 51 x 30mm)

Weight: 6.5 oz (150g)

Maximum Cable Diameter: 0.78" (20mm)

Jaw Opening: 0.83" (21mm) max

Maximum Conductor Size: 0.78" (20mm)

Envelope Protection: IP 40 (IEC 529)

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

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

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

Output: 6 ft (2m) insulated lead with insulated BNC Connector

3.3 Environmental Specifications

Operating Temperature/RH: 14° to 131°F (-10° to 55°C); RH <85%

Storage Temperature: -40° to 158°F (-40 to 70°C)

Influence of Temperature: ≤ 0.15% / 10K

Influence of Humidity: 10 to 90%; 0.2%

Altitude: ≤2000m

3.4 Safety Specifications

LISTED
E192383

Indoor Use

Electrical:
Double insulation or reinforced insulation between the primary or secondary and the outer case of the handle per EN 61010-2-032.

Common Mode Voltage: 600V, Category III, Pollution Degree: 2

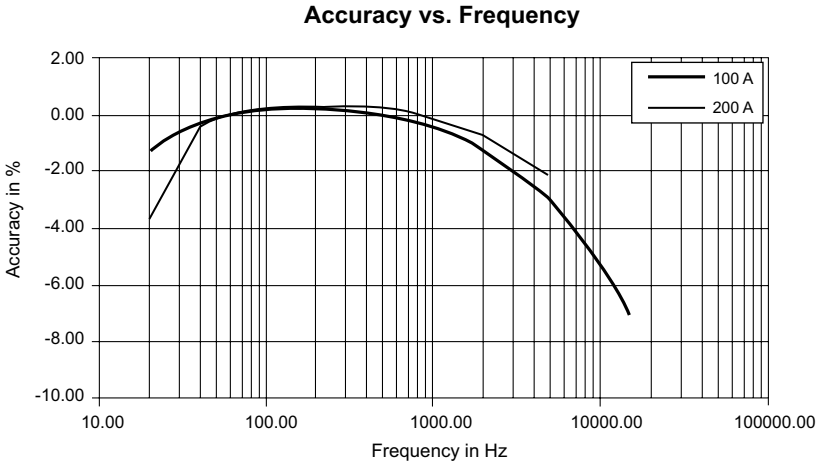
Dielectric Strength: 5550V, 50/60Hz between primary, secondary, and the outer case of the handle

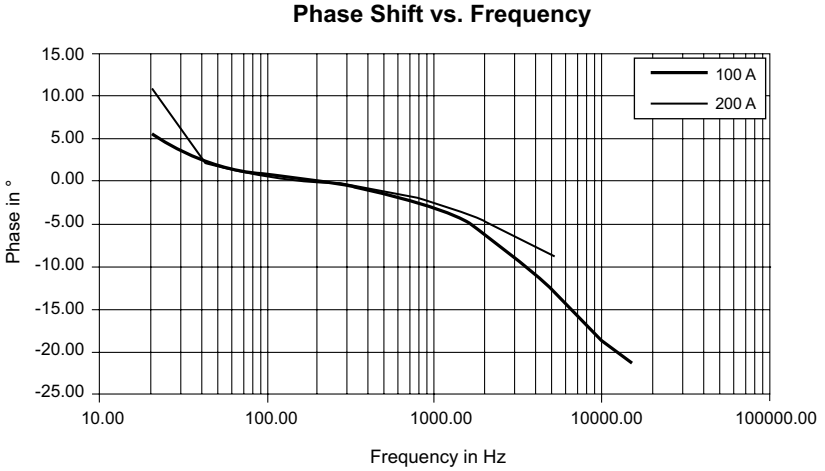
Electromagnetic Compatibility:
EN 50081-1 Class B
EN 50082-2 Electrostatic discharge
IEC 1000-4-2
Radiated field IEC 1000-4-3
Fast transients IEC 1000-4-4
Magnetic field at 50/60 Hz IEC 1000-4-8

**Specifications are subject to change without notice*

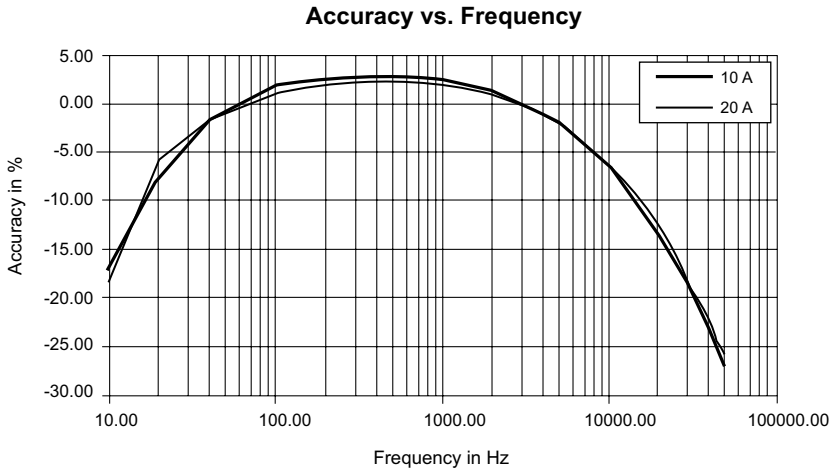
3.5 Typical Response Curves

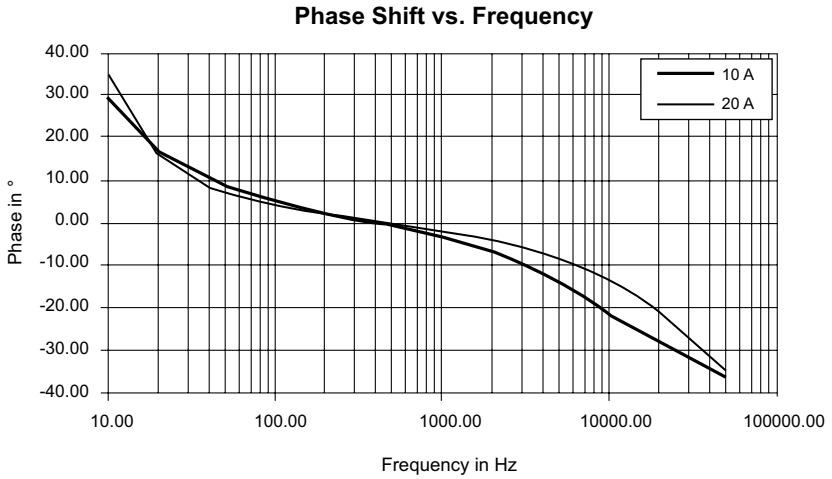
10mV/A Range





100mV/A Range





OPERATION

4.1 Current Measurement

WARNING: Always connect the probe to the instrument ***before*** clamping onto the circuit under test.

- Connect the Model MN261 to the proper input channel on the oscilloscope.
- Begin with the least sensitive range on the current probe (10mV/A).
- Select the 0.5V/Division range on the oscilloscope.
- Clamp the probe on the conductor to be measured and read the current flowing directly on your oscilloscope.

(Remember to unclamp the probe from the conductor before disconnecting it from your meter or instrument.)

You may also use your oscilloscope to amplify the signal while using the 1mV/A probe range (which offers the best accuracy and least phase shift).

NOTE: It is possible to change the range on the current probe without removing the probe from the current carrying conductor, but it is important to remember not to exceed the permissible peak ratings of 340mV peak or 680mV peak to peak maximum. The peak ratings by range are: 34A peak @ 100mV/A and 340A peak @ 10mV/A.

MAINTENANCE

5.1 Maintenance

⚠ **WARNING**

- 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.
- For maintenance use only specified 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 allow water or other foreign substances into the case.
- Disconnect the unit from all circuits and test cables before opening the case.
- Use caution with metallic tools that may short battery packs, power supplies, etc.

5.2 Cleaning

- To clean the probe body, use a soft cloth dampened in a solution of mild detergent and water. To clean the core, open the jaw and clean the exposed core surfaces with a cotton swab dampened with isopropyl alcohol or ethyl alcohol. Lubricate the jaws mating surfaces with a light oil.
- Do not use chemicals containing benzine, benzene, toluene, xylene, acetone, or similar solvents.
- Do not immerse the probe in liquids or use abrasive cleaners.

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be scheduled 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#). 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).

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 or (603) 749-6309
E-mail: repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: You 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 operation or application of your instrument, please call, mail, fax or e-mail our technical support team:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
200 Foxborough Boulevard
Foxborough, MA 02035 USA
Phone: (800) 343-1391
(508) 698-2115
Fax: (508) 698-2118
E-mail: techsupport@aemc.com
www.aemc.com

NOTE: Do not ship Instruments to our Foxborough, MA address.

Limited Warranty

The Model MN261 is warranted to the owner for a period of one year 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.

What AEMC® Instruments will do:
If a malfunction occurs within the one-year period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

REGISTER ONLINE AT:
www.aemc.com

Warranty Repairs

What you must do to return an Instrument for Warranty Repair:

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

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 or (603) 749-6309
E-mail: repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

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

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www.aemc.com